CONQUEST OF THE DEEP By WILLY LEY

THRILLING WONDER STORIES

15¢ JUNE

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A Novelet of Super-Science
By PAUL ERNST

A THRILLING PUBLICATION

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By ARTHUR K. BARNES

MURDER IN THE VOID
A Novelet of Space-Ship Mystery
By EDMOND HAMILTON

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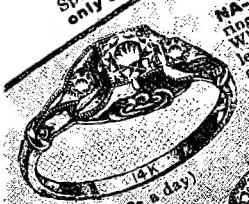

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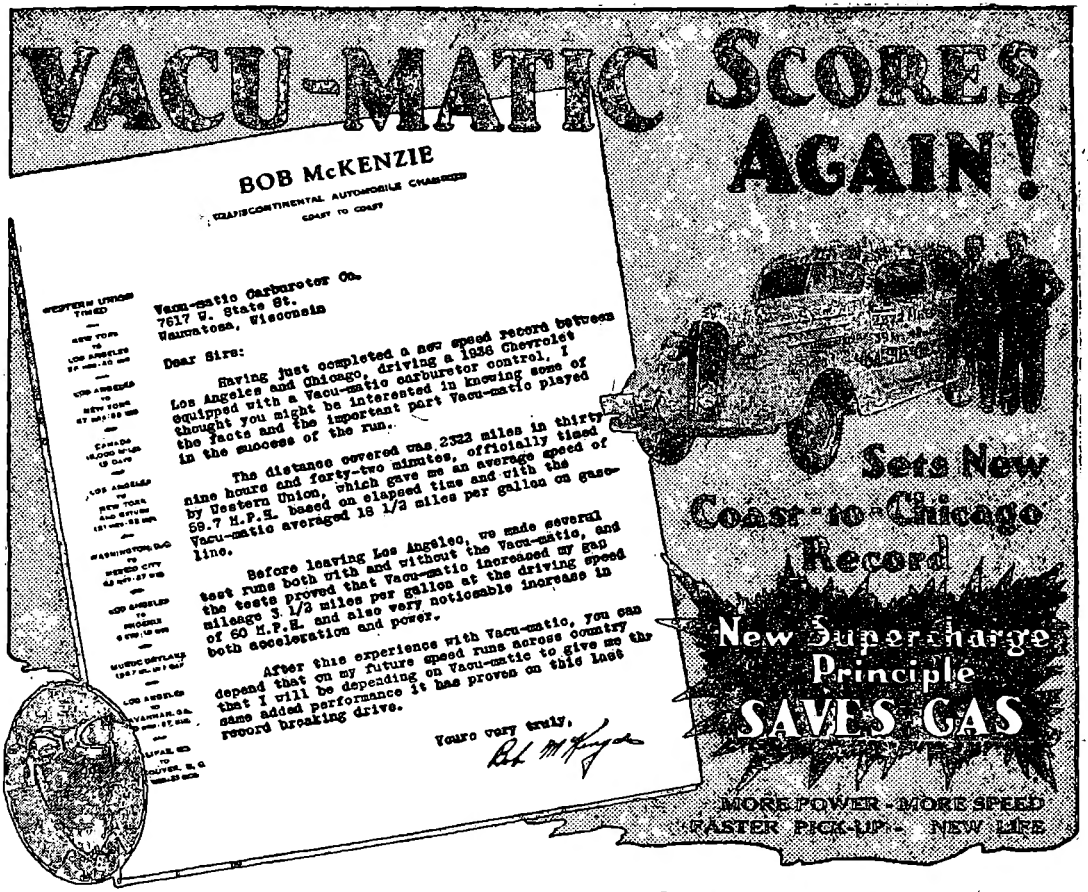
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After this experience with Vacu-matic, you can depend that on my future speed runs across country that I will be depending on Vacu-matic to give me the same added performance it has proven on this last record breaking drive.
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THRILLING WONDER STORIES

The Magazine of Prophetic Fiction

VOL. 11 NO. 3

June, 1938

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DOOM WORLD
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By
HENRY KUTTNER

THE GREEN RAY
A Novelet of the Twenty-first Century
By
ARTHUR L. ZAGAT

THE EXTERMINATORS
An Interstellar Novelet
By
FREDERIC ARNOLD KUMMER, JR.

THE NATURE OF THINGS
A Special Article
By
SIR WILLIAM BRAGG

—Plus many other unusual novelets, stories and features.

EVERY STORY BRAND-NEW

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ON THE COVER

This cover painting depicts a scene from Arthur K. Barnes' novelet, THE DUAL WORLD.

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YES, just like thousands of others, who thought music was hard, this man got the surprise of his life when he tried this easy way to learn music at home. And no wonder! Instead of months of tedious study and practice, he found himself actually playing real tunes in the very first few weeks!

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(*Signed*) *H. C. S., *Calif.*

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*C. C., New Jersey.

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The manner in which the various lessons are explained is very helpful as well as interesting. It makes one feel that the explanation is being given in person.
*W. W., Florida.

Actual pupils' names on request.
Pictures posed by Professional models.

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Cello	Trumpet	Cornet	Other Instrument

Name

Street

City..... State.....

The Story Behind the Story

AS a rule most sequels, we think, come the hard way. The characters have lost their freshness to the writer; he has lived with them too long and is likely to assume a similar familiarity in the minds of his readers, leading to careless characterization. Nor is an inspiration—that strange thing that strikes writers occasionally and shouts aloud that it's bound to make a swell story—likely to prove helpful; because there's already a definite pattern of action to which the writer is committed by his previous stories. His plot must follow a predestined framework, more or less rigid, and just any-old-story-idea won't fit. Sequels seldom write themselves.

CATCH-'EM-ALIVE CARLYLE

But one swell story that seems to have written itself is THE DUAL WORLD, ARTHUR K. BARNES' sequel to "The Hothouse Planet." The team of Carlyle and Strike seems to be enjoying the popularity of our Penton and Blake series. And, by the way, what do you think of the Gerry Carlyle—Nine Planets Films feud?

We think it's grand science fiction fun. We hope good things like Gerry Carlyle last forever and ever. But first, a letter from Mr. Barnes explaining his story's genesis:

THE DUAL WORLD is the result of many small items swelling the main river of the story. Chief of these was the—to me—amazingly generous reader response to the first Gerry Carlyle yarn, for which I am duly grateful, indeed, and a good bit of that salad oil known as kind words and flattery, by our editor. During two hilarious evenings while he visited me on his recent westward trek, we doped out much that will never, alas, see print, and some stuff that eventually went into the making of the story.

A clipping concerning the artificial production of multiple births by inducing the egg-cell to divide gave me the idea of an emanation creating a wholesale birth of twin creatures.

A philosophical argument I once had with a prof in Psych. 1B—about the inter-relation of emotion and intelligence, what would happen if we could divorce the two—gave me the Intellectuals and Emotionals. That fitted, so I dropped it in the pot and stirred.

The gyradoscope was dignified by an article in the Los Angeles **Times**, no less, of some four years back. . . . These and other disparate items made the hodge-podge of material that took a lot of hard writing to smooth out into a presentable yarn, against the familiar background of strange Venusian life-forms and our hardboiled huntress, Miss Carlyle. My, how I'd like to meet that gal!

As usual, the monsters have terrestrial counterparts which most of the readers will identify (the Atlas crab grew from the Hercules beetle, the sea-squirrel from the incredibly oily albatross, etc.). Except the bolas-bird. That was just a bit of whimsy designed to give a chuckle to people whose sense of humor is as cockeyed as mine. . . . I sincerely hope some of the readers can find a few moments enjoyment in the yarn. That's my measure of success.

SPACESHIP MYSTERY

WE know how you fans like your interplanetary stories, surgical yarns, etc. But how much can you go for a genuine mystery story of the next century?

The editors of THRILLING WONDER STORIES speculated about this point, and MURDER IN THE VOID, by EDMOND HAMILTON, is the result. Hamilton was asked to write an interplanetary novelette of the future—and to incorporate into the story a dominant mystery element. In other words, two stories in one.

All the thrills of the modern detective story are captured in MURDER IN THE VOID as Rab Crane of the I.S.S. solves a series of baffling scientific murders.

Here's Mr. Hamilton's letter explaining how he wrote the story. It's one of the most unusual letters we have yet published in this department.

Some readers of MURDER IN THE VOID may be interested in the historical background of the story. They may ask, "How did it happen that our Solar System developed into nine independent worlds, intriguing and struggling for supremacy, when all the planets were originally peopled by the same race?"

In answer to that question, I can only quote from the most authoritative historical work on that period, the monumental "History of the Solar System," in 14 volumes, by Doctor Kobd Alamm, published at Vosek, Jupiter, in 2987.

"Looking back on these interminable interplanetary wars and intrigues," writes Doctor Alamm, "one wonders what the Earthman, Robert Roth, would have thought if he had lived to see them. Undoubtedly Roth would be horrified to see what his great achievement had brought!

"When Roth made those first wonderful pioneering space-flights from Earth, in 1996 and 2001, he believed he was laying the groundwork for a Solar System completely under the rule of Earth. There were no intelligent inhabitants upon any of the worlds which he and his successors in exploration visited. He foresaw a great colonization from Earth, a system of nine worlds inhabited by the same people, ruled by the same government, living in peace and plenty.

"Alas for those golden hopes! For the first few centuries, when colonists were pouring out from Earth onto the other worlds, struggling against different conditions, fighting to establish themselves on alien planets, Earth retained her control over them. But once the other worlds were colonized and had become the seats of large populations who no longer depended on Earth for help, the situation changed. The planet colonies, one by one, broke loose from the mother world.

"First to attempt secession was Mars, the oldest in point of settlement. By 2463, the Martian population had become extremely resentful of the fact that they were still governed from Earth. They had their representatives on the Earth Council, but were still dissatisfied. For they felt that the people of remote Earth did not understand their problems, that the Earthmen were a different race. And in fact, a dozen or more generations under the vastly different conditions of Mars had caused profound physical and psychic changes in the original colonial stock. It is hardly surprising that the Martians declared their independence, and began rebellion.

"Earth put down that rebellion, though it broke forth sporadically for a hundred years following. But when Venus, and Jupiter, and finally even Mercury and the remote outer planets, also rebelled and demanded independence, the hard-pressed navy of Earth could no longer keep all these planets subdued. To end an internecine war that threatened to depopulate the whole System, Earth

(Continued on page 126)

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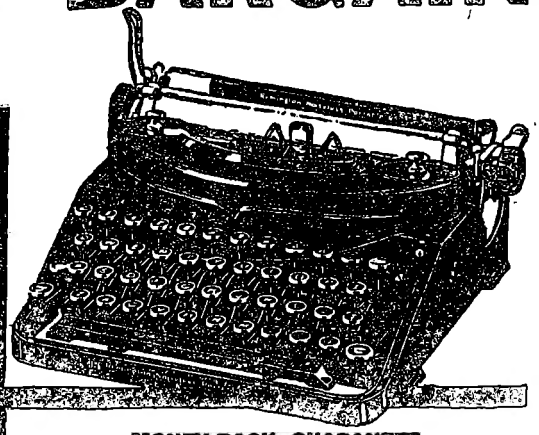

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FREE → CARRYING CASE

Also under this new Purchase Plan we will send you FREE with every Remington Noiseless Portable a special carrying case sturdily built of 3-ply wood. This handsome case is covered with heavy du Pont fabric. The top is removed by one motion, leaving the machine attached to the base. This makes it easy to use your Remington anywhere—on knees, in chairs, on trains. Don't delay . . . send in the coupon for complete details!

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The gem of all portables. Imagine a machine that speaks in a whisper . . ./that removes all limitations of time or place. You can write in a library, a sick room, a Pullman berth without the slightest fear of disturbing others. And in addition to quiet a superb performance literally makes words seem to flow from the machine Equipped with all attachments that make for complete writing equipment, the Remington Noiseless Portable produces manifolding and stencil cutting of truly exceptional character. Furnished in black with shining chromium attachments.

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Please tell me how I can get a new Remington Noiseless Portable typewriter, plus FREE typing course and carrying case, for only 10c a day. Also send me new illustrated catalogue.

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Address _____

City _____ State _____

STOP, LOOK and LAUGH!

Extract from a co-ed's letter home: "I am getting fat. I weigh 128 stripped. Of course, the scales at the drug store may not be so accurate, but that's what they register."

—Iowa Frivol.

Mary Had a Football Man

Mary had a football man
Who had a tricky toe
And everywhere that Mary went
Her man was sure to go.

He followed her to class one day
Though not against the rule,
It surely made them laugh to see
A football man in school.

—Maryland Old Line.

"Gosh! That sounds like a gun, and I've been afraid of firearms since birth."

"Was your mother scared by a gun?"

"No, but I think my father was."

—Missouri Showme.

Chemical retort: He who acetates is lost.

—Cornell Widow.

"Yes, the bullet struck my head and went careening into space."

"How terrible! Did they get it out?"

—Illinois Siren.

Duke: "When you stay after class with the professor what do you do, study history?"

Duchess: "No, make it!"

—Duke Duke 'n' Duchess.

First Drunk: "What did you shay when when you lost at shtrip poker?"

Second ditto: "I shed plenty."

—Oklahoma Covered Wagon.

Cut the Comedy

First Executioner: Is that so, well last week I cut off more heads than you'll cut off in your whole life.

Second Executioner: Listen, bud, I've brought that old slicer down on the crowned heads of five countries.

Third Executioner: Come, come, boys, let's not talk chop.

—Western Reserve Red Cat.

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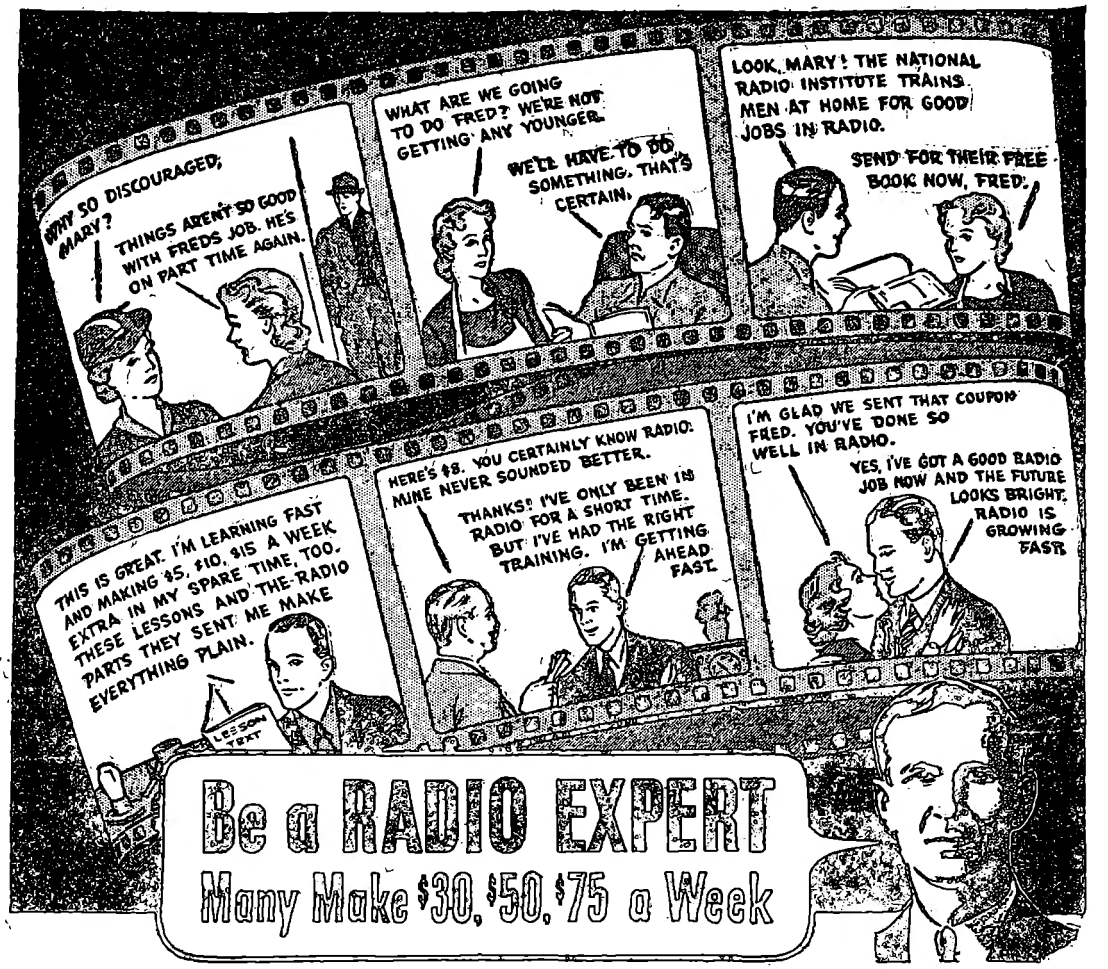
WHY SO DISCOURAGED, MARY?
THINGS AREN'T SO GOOD WITH FREDS JOB. HE'S ON PART TIME AGAIN.
WHAT ARE WE GOING TO DO FRED? WE'RE NOT GETTING ANY YOUNGER.
WE'LL HAVE TO DO SOMETHING. THAT'S CERTAIN.
LOOK, MARY! THE NATIONAL RADIO INSTITUTE TRAINS MEN AT HOME FOR GOOD JOBS IN RADIO.
SEND FOR THEIR FREE BOOK NOW, FRED.
THIS IS GREAT. I'M LEARNING FAST AND MAKING $5, $10, $15 A WEEK EXTRA IN MY SPARE TIME, TOO. THESE LESSONS AND THE RADIO PARTS THEY SENT ME MAKE EVERYTHING PLAIN.
LESSON TEXT
HERE'S $8. YOU CERTAINLY KNOW RADIO. MINE NEVER SOUNDED BETTER.
THANKS! I'VE ONLY BEEN IN RADIO FOR A SHORT TIME. BUT I'VE HAD THE RIGHT TRAINING. I'M GETTING AHEAD FAST.
I'M GLAD WE SENT THAT COUPON FRED. YOU'VE DONE SO WELL IN RADIO.
YES, I'VE GOT A GOOD RADIO JOB NOW AND THE FUTURE LOOKS BRIGHT. RADIO IS GROWING FAST.
Be a RADIO EXPERT
Many Make $30, $50, $75 a Week

Many Radio Experts Make $30, $50, $75 a week

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Mail the coupon now for "Rich Rewards in Radio." It's free to any fellow over 16 years old. It points out Radio's spare-time and full-time opportunities, also those coming in Television; tells about my training in Radio and Television; shows you letters from men I trained, telling what they are doing, earning; shows my Money Back Agreement. MAIL THE COUPON in an envelope or paste it on a penny postcard—NOW!

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This is a call for men everywhere to handle exclusive agency for one of the most unique business inventions of the day.

Forty years ago the horse and buggy business was supreme—today almost extinct. Twenty years ago the phonograph industry ran into many millions—today practically a relic. Only a comparatively few foresighted men saw the fortunes ahead in the automobile and the radio. Yet irresistible waves of public buying swept these men to fortune, and sent the buggy and the phonograph into the discard. So are great successes made by men able to detect the shift in public favor from one industry to another.

Now another change is taking place. An old established industry—an integral and important part of the nation's structure—in which millions of dollars change hands every year—is in thousands of cases being replaced by a truly astonishing, simple invention which does the work better—more reliably—AND AT A COST OFTEN AS LOW AS 2% OF WHAT IS ORDINARILY PAID! It has not required very long for men who have taken over the rights to this valuable invention to do a remarkable business, and show earnings which in these times are almost unheard of for the average man.

EARNINGS

One man in California earned over $1,600 per month for three months—close to $5,000 in 90 days' time. Another writes from Delaware—"Since I have been operating (just a little less than a month of actual selling) and not the full day at that, because I have been getting organized and had to spend at least half the day in the office; counting what I have sold outright and on trial, I have made just a little in excess of one thousand dollars profit for one month." A Connecticut man writes he has made $55.00 in a single day's time. Texas man nets over $300 in less than a week's time. Space does not permit mentioning here more than these few random cases. However, they are sufficient to indicate that the worthwhile future in this business is coupled with immediate earnings for the right kind of man. One man with us has already made over a thousand sales on which his earnings ran from $5 to $60 per sale and more. A great deal of this business was repeat business. Yet he had never done anything like this before coming with us. That is the kind of opportunity this business offers. The fact that this business has attracted to it such business men as former bankers, executives of businesses—men who demand only the highest type of opportunity and income—gives a fairly good picture of the kind of business this is. Our door is open, however, to the young man looking for the right field in which to make his start and develop his future.

Not a "Gadget"— Not a "Knick-Knack"—

but a valuable, proved device which has been sold successfully by business novices as well as seasoned veterans.

Make no mistake—this is no novelty—no flimsy creation which the inventor hopes to put on the market. You probably have seen nothing like it yet—perhaps never dreamed of the existence of such a device—yet it has already been used by corporations of outstanding prominence—by dealers of great corporations—by their branches—by doctors, newspapers, publishers—schools—hospitals, etc., etc., and by thousands of small business men. You don't have to convince a man that he should use an electric bulb to light his office instead of a gas lamp. Nor do you have to sell the same business man the idea that some day he may need something like this invention. The need is already there—the money is usually being spent right at that very moment—and the desirability of saving the greatest part of this expense is obvious immediately.

Some of the Savings You Can Show

You walk into an office and put down before your prospect a letter from a sales organization showing that they did work in their own office for $11 which formerly could have cost them over $200. A building supply corporation pays our man $70, whereas the bill could have been for $1,600! An automobile dealer pays our representative $15, whereas the expense could have been over $1,000. A department store has expense of $88.60, possible cost if done outside the business being well over $2,000. And so on. We could not possibly list all cases here. These are just a few of the many actual cases which we place in your hands to work with. Practically every line of business and every section of the country is represented by these field reports which hammer across dazzling, convincing money-saving opportunities which hardly any business man can fail to understand.

Profits Typical of the Young, Growing Industry

Going into this business is not like selling something offered in every grocery, drug or department store. For instance, when you take a $7.50 order, $5.83 can be your share. On $1,500 worth of business, your share can be $1,167.00. The very least you get as your part of every dollar's worth of business you do is 67 cents—on ten dollars' worth $6.70, on a hundred dollars' worth $67.00—in other words two thirds of every order you get is yours. Not only on the first order—but on repeat orders—and you have the opportunity of earning an even larger percentage.

This Business Has Nothing to Do With House to House Canvassing

Nor do you have to know anything about high-pressure selling. "Selling" is unnecessary in the ordinary sense of the word. Instead of hammering away at the customer and trying to "force" a sale, you make a dignified, business-like call, leave the installation—whatever size the customer says he will accept—at our risk, let the customer sell himself after the device is in and working. This does away with the need for pressure on the customer—it eliminates the handicap of trying to get the money before the customer has really convinced himself: 100%. You simply tell what you offer, showing proof of success in that customer's particular line of business. Then leave the invention without a dollar down. It starts working at once. In a few short days, the installation should actually produce enough cash money to pay for the deal, with profits above the investment coming in at the same time. You then call back, collect your money. Nothing is so convincing as our offer to let results speak for themselves without risk to the customer! While others fail to get even a hearing, our men are making sales running into the hundreds. They have received the attention of the largest firms in the country, and sold to the smallest businesses by the thousands.

No Money Need Be Risked

In trying this business out. You can measure the possibilities and not be out a dollar. *If you are looking for a business that is not overcrowded*—a business that is just coming into its own—on the upgrade, instead of the downgrade—a business that offers the buyer relief from a burdensome, but unavoidable expense—a business that has a prospect practically in every office, store, or factory into which you can set foot—regardless of size—*that is a necessity* but does not have any price cutting to contend with as other necessities do—that because you control the sales in exclusive territory is your own business—*that pays more on some individual sales than many men make in a week and sometimes in a month's time*—if such a business looks as if it is worth investigating, *get in touch with us at once* for the rights in your territory—don't delay—because the chances are that if you do wait, someone else will have written to us in the meantime—and if it turns out that you were the better man—we'd both be sorry. So for convenience, *use the coupon below*—but send it right away—or wire if you wish. But do it *now*. *Address*

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F you look like the picture on the left—skinny, run-down, unattractive to the other sex—don't think or a moment that your case is hopeless. Thousands f men and women who never could put on an ounce efore have gained 10 to 25 pounds of good, solid flesh a few weeks with these wonderful new Ironized east tablets.

They've also gained naturally clear skin and ruddy olor, new health and strength—new pep, new popu-rity and joy in life they never knew before.

Why they build up so quick

cientists have discovered that hosts of people are in and rundown simply because they do not get ough Vitamin B and iron in their daily food. Vithout these vital elements you may lack appetite nd not get the most body-building good out of what ou eat. One of the richest sources of marvelous ealth-building Vitamin B is the special yeast used making English ale.

Now by a new and costly process this rich ale yeast concentrated, taking 7 pounds of yeast to make ist one pound of concentrate—thus making it many imes more powerful in Vitamin B strength than rdinary yeast. It is then combined with three kinds f strength-building iron (organic, inorganic and emoglobin iron); also pasteurized English ale yeast. inally, every batch of this Ironized Yeast is tested nd retested biologically for its Vitamin B strength. his insures its full weight-building power.

The result is these new easy-to-take but marvelously effective little Ironized Yeast tablets which have elped thousands of the skinniest people who needed these vital elements quickly to gain normally attractive build, natural development and peppy health.

Make this money-back test

To make it easy for you to try Ironized Yeast, we do better than offer you a small sample package. We offer you a FULL SIZE package, and you don't risk a penny. For if with this first package you don't begin to eat better and get more benefit from your food—if you don't feel better, with more strength, pep and energy—if you are not absolutely convinced that Ironized Yeast will give you the pounds of normally attractive flesh you need—the price of this first package will be promptly refunded. So get Ironized Yeast tablets from your druggist today.

Only be sure you get the original Ironized Yeast. There are many cheaper "Iron and Yeast" tablets on the market. Insist on the genuine Ironized Yeast.

Special offer!

To start thousands building up their health right away, we make this valuable special offer. Purchase a package of Ironized Yeast tablets at once, cut out the seal on the box and mail it to us with a clipping of this paragraph. We will send you a fascinating new book on health, "New Facts About Your Body." Remember, results with the very first package—or money refunded. At all druggists. Ironized Yeast Co., Inc., Dept. 775, Atlanta, Ga.

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FREE TRIAL of my Rupture Invention

If It Doesn't Stop Your Rupture Worries I'll Take The Loss!

NO STEEL SPRINGS

NO HARD PADS

IN MY Brooks truss invention there are no steel springs—instead the pad is held in place by a soft body band that is just as comfortable as a glove. In my design there is no hard pad. Instead there is a soft, hollow AIR-CUSHION, firm enough to always hold the rupture just right, yet soft and flexible enough to give perfect comfort without gouging. If you look at the illustrations below you will see what I mean by gouging.

WRONG

A pad that presses into the opening absolutely prevents Nature from Healing. The opening cannot close up.

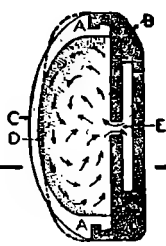
RIGHT

This second illustration shows how the Brooks Invention holds the rupture so that the edges of the ring are close together—close enough for Nature to strengthen and possibly heal.

I SEND you my Rupture Invention on trial because ruptured people have been fooled so many times by quack schemes and worthless "cure-alls" that they don't know what to believe. There are as many kinds of rupture trusses as there are blacksmiths. All of the makers CLAIM wonderful and unusual qualities for their products. But I say: "Seeing is believing." If you have a reducible rupture I KNOW what the Brooks will do for you—BUT I won't make any claims. I want you to try for yourself. I'll send it to you on trial. You keep it ten days—at my risk. Lay aside your old truss. Then see how the Brooks Invention gives you these three big advantages. Remember these are not claims. These are the benefits the Brooks MUST bring you before you decide to keep it.

1. Immediate restoration of normal physical activities. Walk, run, bend or stoop without fear of having the AIR-CUSHION pad slip and let your rupture down.

2. A Support so comfortable, so light in weight and inconspicuous, that you soon forget that you are wearing any support at all.



FLEXIBLE AIR-CUSHION

This is the patented, flexible Brooks AIR-CUSHION. It is made in two parts—the soft rubber bulb (A) which forms the pad which comes in contact with the body, and the light weight disc (B), which holds the pad. (E) shows the shape of the soft rubber pad before it is pressed against the body. The dotted line (D) shows how the pad flattens out under pressure expelling the air through the orifice (E) through which the pad figuratively breathes as it adjusts to conform to different body pressures.

3. It Must hold your rupture in exactly the right position, to give Nature the greatest chance to heal—to strengthen the muscles and close the opening. If the broken ends of a bone are not held together the bone will never knit. The same with rupture. If the rupture is not held properly Nature hasn't got a chance.

REMEMBER I don't promise a cure. I don't make any claims. You don't take my word for a thing. You see for yourself and then decide. Send your name quick for my Book and for my Trial order blank. All information is free. There is no charge now or at any other time for all the facts and the free trial plan of this world famous Rupture Invention that has come to thousands of people almost like the answer to a prayer. Surely you owe it to yourself to investigate, for you have everything to gain and nothing to lose. Send the coupon now and you will soon know what it is like to be Free of Rupture Worries.

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185-L State Street
MARSHALL, MICHIGAN

CONFIDENTIAL COUPON

H. C. Brooks, Mgr., 185-L State St., Marshall, Michigan.

Dear Sir: Please send me your Book on the Proper Support of Rupture and also your offer of a 10-day Trial of the Famous Brooks. I understand there is no cost or obligation for this information and that my inquiry will be treated in confidence and all material mailed in plain envelope.

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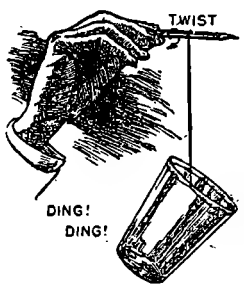
State whether for ☐ Man ☐ Woman or ☐ Child

MYSTIC GLASS Answers All Questions

Dunninger, greatest living authority on magical mysteries, writing exclusively for* MECHANICS AND HANDICRAFT, *explains this startling trick:



With a thread about 18" long, an ordinary water glass is tied to a round wooden pencil. The loop around the pencil is made loose enough to slip. When the pencil is turned ever so slightly the glass emits a loud "ting." This enables the performer to claim that his "mystic glass" can answer all questions — giving two sounds for "yes" and one sound for "no." Imperceptibly turning the pencil to get the desired responses, the performer amazes all! Try it yourself.

Just as this mystic glass (in the hands of a clever operator) answers all questions, so is* MECHANICS AND HANDICRAFT *the answer to your every question about science, invention, chemistry, physics, photography, wood working, metal working, and all indoor and outdoor hobbies.

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Address.....

MURDER

The shadowy figure lunged

A Complete Novelet

By EDMOND

Author of "Power Pit 13,"

CHAPTER I

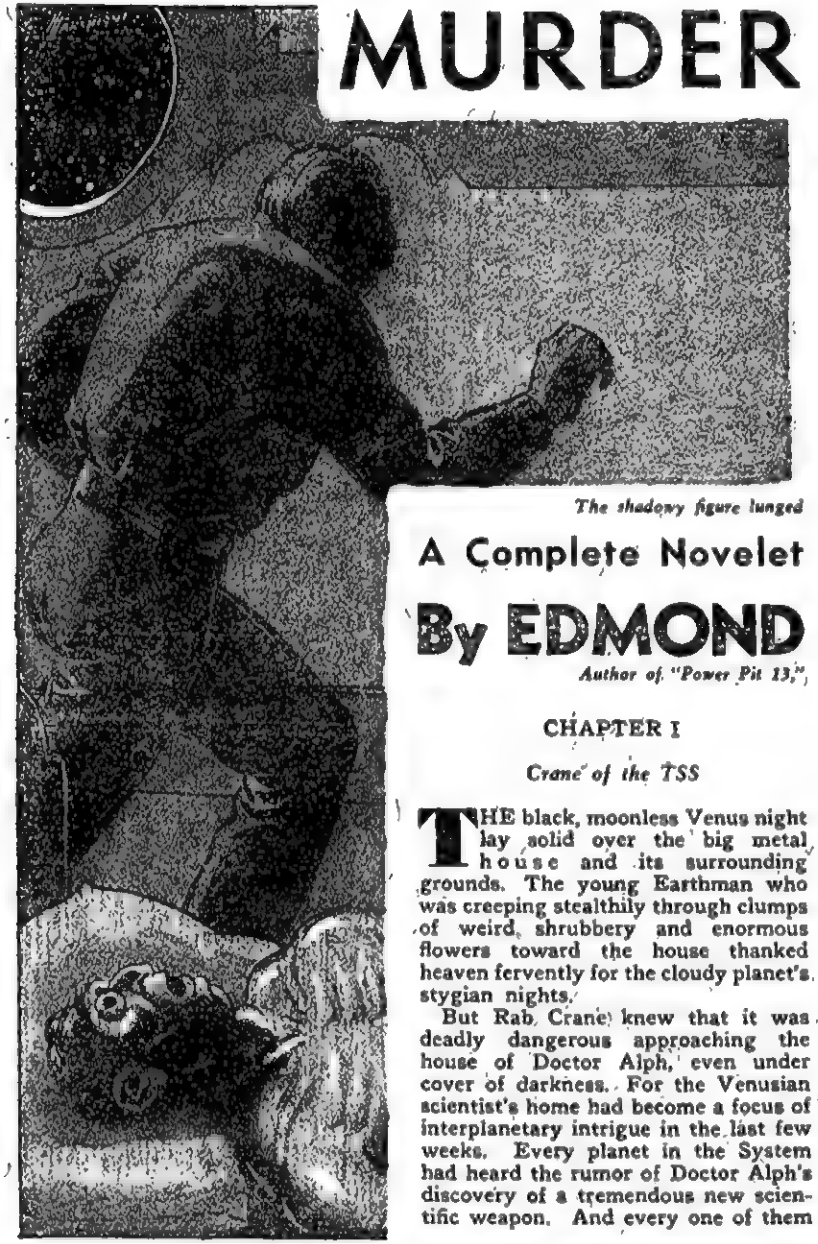
Crane of the TSS

THE black, moonless Venus night lay solid over the big metal house and its surrounding grounds. The young Earthman who was creeping stealthily through clumps of weird shrubbery and enormous flowers toward the house thanked heaven fervently for the cloudy planet's stygian nights.

But Rab Crane knew that it was deadly dangerous approaching the house of Doctor Alph, even under cover of darkness. For the Venusian scientist's home had become a focus of interplanetary intrigue in the last few weeks. Every planet in the System had heard the rumor of Doctor Alph's discovery of a tremendous new scientific weapon. And every one of them

An Alien Vandal Seeks Control of the

MURDER in the VOID



The shadowy figure lunged forward. "Stop, I'll fire!" warned Crane

A Complete Novelet of Space-Ship Mystery

By EDMOND HAMILTON

Author of "Power Pit 13," "Space Mirror," etc.

CHAPTER I

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Crane's bronzed, aquiline face tensed as he crouched for a moment beside a stiff, grotesque shrub. As a member of the Terrestrial Secret Service he had been sent by the TSS to get Doctor Alph's secret weapon and he'd do it or die trying.

Not a light showed from anywhere in the dark, square metal house.

"Too quiet," muttered Crane to himself. "Looks like a trap."

He shifted his stubby beam-pistol to his left hand, and with his right drew a compact little instrument from his pocket. Then he moved silently on toward the dark house.

"Here goes nothing," he whispered. "In two minutes I'll probably rate a nice memorial plaque at headquarters."

Like a sliding shadow, Crane flat-

An Alien Vandal Seeks Control of the Strangest Scientific Weapon Known to Man!

in the VOID

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HAMILTON

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Strangest Scientific Weapon Known to Man!

tened against the side of the house, just beneath a window. He reached up with the little oval instrument he held.

It was a recorder which registered the presence anywhere nearby of "invisible watchmen," those diabolically ingenious combinations of electric eyes and atomic beams, effective alarms that blasted down intruders without warning.

To Rab Crane's amazement, the recorder showed no such protective devices in operation around the window. What did it mean? It looked to him like a deliberate trap set by the Venusian scientist.

But he had to go through with it. Too late to back out now. He severed the catch of the window by a single tiny, smothered flash from his beam-gun. He rolled the flexible glass quickly aside and drew himself rapidly up into the dark room. He poised motionless in the dark, listening. The house was as silent as the grave. He could not understand it but his instincts warned him of peril.

Soundlessly he moved across the dark room. He knew that Doctor Alph's laboratory lay at the back of the house. There, if anywhere, he might find some clue to the Venusian scientist's great discovery that had so perturbed the planetary governments.

He watched his little recorder alertly as he advanced, expecting it each moment to flash the tiny signal spark that would warn of a network of deadly beams ahead. But it gave no signal. Apparently the whole web of the house's protective beams had been turned off at the main switch. But why?

CRANE moved quickly out of the room into an equally dark hall. In the hall he tripped on something soft and recoiled, his gun-arm stiffening.

He heard no sound. In a moment he ventured to flash a tiny needle of light from a ring on his finger, onto the floor. His breath sucked inward with a sharp hiss. A Venusian house-guard lay there! One glance assured him the man was dead.

The man's neck had been broken cleanly, as though by a twist of powerful hands. The marks of the killer's fingers were still visible, red against the Venusian's milky white skin. A beam-gun was still in his limp hand.

So, Rab Crane thought, someone else had visited Doctor Alph's house tonight, ahead of him. Probably some other interplanetary spy trying to get the Venusian scientist's deadly secret for his own world just as Crane was trying to get it for Earth.

Had the other spy got it?

Crane's heart went cold with apprehension at the thought. He straightened from examining the dead guard and moved quietly down the dark hall. He had no fear of the beam-web now. He realized that whoever had been ahead of him had cut off the whole protective system.

He went around a corner of the hall and almost stepped on two more dead Venusians. They, too, had been strangled by clutching fingers that had snapped their necks like pipe-stems. Why hadn't they beamed the killer with their guns when he attacked them?

The door of the laboratory was wide open. Inside, all was dark and deadly still. But instinct warned Crane against showing a light as he stepped into the room. He stopped, his eyes trying to penetrate the darkness. Then a smell came to him that made the hair rise along the back of his neck.

The smell of fresh blood! It came from the darkness at his right. Crane flicked on the tiny ray of his ring-light, swung its beam to the floor. Another body! And one glance at the distorted face told him who it was.

The Venusian scientist's neck had been broken like those of the guards. But his head had been smashed also into a bloody red mass. His massive face, comparatively undamaged, stared upward in the beam of light, horribly contorted.

Then Rab Crane's stunned mind perceived something and instantly comprehended its pressing significance. The blood pool from the shattered skull of Doctor Alph was still widening along the floor! That meant that it had been no more than a few moments since the killer had been there!

He might still be in the house!

Crane doused his little light and sprang to his feet. But the realization had come too late.

In the darkness behind him a harsh voice said, "Kill him!"

A black shape became a moving shadow in the darkness. With swift, heavy strides it approached. Then a hard fist struck for Rab Crane's skull in a terrific blow, even as he ducked.

Only the lightning, instinctive swerve of the TSS man saved him from instant death. As it was, the blow grazed his temple. He reeled, falling stunned, but his senses did not leave him immediately.

As consciousness receded from him, Crane heard, as though in a dream, a voice saying rapidly:

"Quick! To the *Vulcan* now! I'll carry the brain-case!"

Then a hurry of receding steps, and a harsh voice gloating, mirthfully, in the distance, "When they find the dead Earthman there beside Doctor Alph, they'll think he did it all!"

Darkness closed in on Crane then.

HE awakened to a dim awareness of his surroundings, wondered how long he had been senseless. A dazed glance at his watch told him it had been almost an hour.

As full remembrance came to Rab Crane, he staggered to his feet. The laboratory, the house around him, were as dark and silent as before. His head was aching blindingly.

He had blundered badly, he knew. In his first shock of finding that someone had been ahead of him, he had not stopped to reflect that the other spy—or spies—might still be in the laboratory, might have heard him entering and lain in wait for him.

He tried to remember the orders issued by the unseen attackers. Something about getting to the *Vulcan*, quick — and something about a brain-case.

The *Vulcan*—that was the big space-liner that was sailing tonight for Jupiter, with stops at Mars and Earth. Whatever interplanetary spy had been here was planning to leave Venus tonight on that ship!

But what was it that had been said about a brain-case? Slowly his stunned brain rallied. The voice had said:

"Quick! To the *Vulcan!* I'll carry the brain-case."

Suddenly into Rab Crane's confused mind shot a possible explanation.

He bent quickly over the dead body of Doctor Alph once more, flashed his ring-light on the shattered skull of the Venusian scientist. He gasped as he saw that his shocking surmise had been right.

There was no brain in the broken skull of Doctor Alph! The scientist's brain had been carefully removed by cunning surgery after the skull had been smashed by a blow. Or possibly the blow had been delivered after the operation so that no one would notice the horrible theft.

"God in heaven!" muttered Rab Crane. "Whoever came to get Doctor Alph's secret, got it—by stealing his brain!"

Rab Crane was aghast. He knew that in these days the removal of a living brain from a man's body, and keeping it living in special serum, was child's play to anyone versed in surgery.

And he knew, too, that such preserved, living brains could be made to think and remember; that they could be communicated with by microphonic and loud-speaker electrical connections to their hearing and speech nerve-centers. Whoever had taken Doctor Alph's brain had come here intending to steal it, and had brought a special serum-case for its transportation!

And the brain-thief might be already aboard the *Vulcan*, ready to leave Venus with his ghastly loot. Once away from Venus, it would not take him long to make the living brain give up its secret, and that meant that the planet the thief served would acquire the dead scientist's terrible secret weapon!

Rab Crane looked swiftly at his watch again. The *Vulcan* sailed at nine. It was a little after eight. He would have just time enough to get aboard the space-liner before it took off—if he were not stopped.

He must get aboard! Somewhere on that ship was the stolen brain whose

terrific secret might spell conquest of and doom for Earth. His one slim chance now was to get on the liner, yet he had but forty minutes to reach the space-station on the other side of the great Venusian metropolis!

THE big clock over the space-station showed just ten minutes short of nine when the TSS man fought through the crowd to the gangway of the *Vulcan*. People were waving farewell to departing friends, sweating dock-hands were hustling last-minute freight into the ports, ship's officers were bawling orders. Over the crowd and flaring lights loomed the vast, cigarlike metal bulk, waiting in its cradle for the moment of its flaming leap into space.

Rab Crane, gripping his suitcase in one hand and interplanetary passport and ticket in the other, ran up the gangplank into the glassite-walled promenade deck where the Venusian ship's officer on duty was being beset by passengers wanting various services.

A shriveled, red-skinned little Martian with enormous spectacles was fussing at the office. "I want my crate of machinery samples in my cabin, not in the hold. They're valuable!"

A squat, huge-shouldered Jovian was thrusting rudely past others to make his complaints heard, and a handsome young Earthman who had evidently had too much of the intoxicating "blue force," was asking plaintively, "Where's the vibration-bar?"

The harassed officer glanced at Rab Crane's passport hurriedly.

"Norman Idwal, citizen of Earth, importer. Okay, Mr. Idwal," he said.

A steward ran along the deck banging a gong and crying, "Five minutes to take-off time! All passengers in their cabins!"

Rab Crane, his heart still hammering from his race to the space-station, had a steward find his cabin. Once in it, the TSS man locked the door and lay down on the bunk as required.

He was on the ship, at least! But who among its scores of passengers could be the spy who had the brain of Doctor Alph? How could he hope to identify him?

Suddenly, in the little cabin, a harsh, loud voice spoke to Rab Crane.

"Crane, I see I failed to kill you in Doctor Alph's," the voice rasped.

Rab Crane bounded to his feet, his beam-pistol leaping into his hand. He glanced around the cabin; there was no one in it but himself. He flung open the door, but no one was in the corridor.

That harsh voice was speaking on, seemingly from the air beside him.

"There are still two minutes left before the *Vulcan* starts. Unless you leave the ship, you will die one minute after the take-off."

The menacing voice ceased abruptly. But this time Crane had traced it. It came from his own coat pocket!

He thrust his hand into the pocket and drew out a small watchlike metal instrument, apparently a super-compact radio receiver and loud-speaker. Someone on deck must have dropped it in his pocket as he boarded the liner.

Crane stared at the thing, thinking fast. This meant that the brain-thief had seen him come abroad, meant to kill him to get him off the trail. But how could the man hope to kill him, here in his locked cabin

He could hear the space-doors of the liner slowly grinding shut. The beat-beat-beat of the ventilation system began. There was a breathless hush throughout the ship. Then with a tremendous roar and quivering shock, the vista outside Crane's cabin window vanished as the *Vulcan* roared out toward space.

Crane crouched, rocking from the shock of starting, his beam-gun gripped in his hand, his bronzed face drawn in a mirthless grin. The harsh voice spoke again, from the watch-shaped thing in his other hand.

"You were not wise enough to get off the ship. Therefore you die—now!"

CHAPTER II

Death Ship

BEFORE that rasping voice had ceased to sound, Rab Crane knew

how he was about to be murdered. It seared across his brain in a flash even as his muscles sprang into action.

He plunged for the cabin door, tore it open and hurled the watchlike thing in his hand far down the corridor. Before it even hit the floor, it exploded in a blinding flash of atomic force and light!

"God, why didn't I see it before!" exclaimed Rab Crane hoarsely as he wiped his glistening brow. "He had an atomic charge planted in that thing, where he could detonate it by remote control whenever he wanted."

Then he saw that the blinding flash of force had eaten a hole in one inner wall of the corridor but had done no other damage. Excited voices were crying in alarm and heads were sticking out of doors along the corridor.

Stewards and officers came running into the corridor even as Rab Crane drew back into his cabin.

Listening, he heard the officers finish their futile examination and depart, remarking that the atomic bomb must have been planted in the ship earlier. The excited passengers dispersed, reassured that no harm had been done the ship.

Crane found himself shaken a little, despite his steel-hard nerves. The ingenuity of the attempt against his life had been diabolical. Undoubtedly his unknown antagonist was the most deadly he had ever challenged.

Yet Crane's determination to wrest Doctor Alph's stolen brain from the other spy was strenghtened rather than weakened. That weirdly living brain was a doom hanging over Earth!

When he dressed for dinner, Crane put his beam-pistol inside his coat, and the feel of it was comforting as he walked into the big, brilliantly lighted dining saloon. Laughing, chatting men and women of several planets, expensively garbed and gowned and jewelled, filled the room. Under the conversation, a Venusian orchestra was softly playing haunting popular melodies.

The steward who led Rab Crane to a table in a corner apologized for its obscure position.

"It's not a very good table, sir, but it was all we had left for last-minute passengers like yourself."

His words made Crane study the others at the table closely as they introduced themselves. The spy who had the stolen brain would be a last-minute passenger, too. He must be at this table!

The four other men at the table were of four different worlds. One was Kin Nilga, a Saturnian rocket engineer, with solemn green face, pale, big eyes and the great-boned body of his race.

Next to him sat Jurk Usk, a Jovian shipping-magnate, squat, huge-shouldered and heavy-browed like all men of Jupiter, and as surly and sparing of words as most of his compatriots.

The other two were Kark Al, the thin, wisp-like, spectacled little Martian salesman whom Crane had heard complaining about his machinery samples; and Donn Ennimer, the handsome, drunken young Earthman he had noticed when he boarded ship.

THE young Earthman had apparently been imbibing further of the intoxicating blue vibrations at the bar. He was talking with drunken owlishness, to the table at large.

"The service at this table is unspeakable!" Kark Al, the little Martian, told Crane indignantly. "We've been waiting a quarter hour. I'm going to speak to the captain—"

Crane only half listened to their voices. The TSS man was keenly studying the Jovian and Saturnian. He was remembering how the necks of the men in Doctor Alph's house had been broken with one snap.

Only a Jovian or Saturnian had the physical strength to do such a thing! And these two were the only representatives of their worlds in the dining saloon. Was one of them the man with whom Crane was struggling blindly? His heart began to beat a little faster.

"This is my table, isn't it? My name is Lalla Dee," an uncertain, girlish voice said.

It was a Venusian girl who was claiming the last empty chair at the table. She was young and pretty. She wore a white silk dress, and her dark eyes were shining with naive excitement as she looked over the glittering

saloon. Crane introduced everyone to her.

"This is my first trip off Venus," Lalla Dee told Crane shyly. "I just won a contest in college—the first prize was a trip to Earth. Isn't it wonderful—people of five different worlds right at this table!"

Crane smiled and said, "Yes, and all of them hungry. It looks as though our steward had forgotten us completely."

"It's an outrage!" declared Kark Al angrily.

"Not gonna wait any longer for stew'rd. I'm hungry," the drunken young Earthman, Ennimer, said owlishly.

And calmly the drunk took one of the exquisite Venusian flame orchids from the center vase, salted it, and began to eat it. Lalla Dee giggled, and Kark Al snorted in disgust.

Crane had not taken his eyes off the Jovian and Saturnian. Jurk Usk sat in the same surly, unmoved silence, but Crane thought that the Saturnian was under tension, that something lurked behind those pale, big-pupiled eyes. Was Kin Nilga his man?

"I was a little afraid to come alone on this trip, but now—" The girl's voice broke off as a scream of awful agony ripped the gay chatter of the saloon and froze everyone into horrified silence.

The scream came from the throat of the drunken young Earthman who had been eating the orchid. The man's lax handsome face was contorted now in agony, his eyes protruding, his body arched half out of his chair, his hands clawing the air.

Another ghastly shriek bubbled from his throat into the frozen silence. Then he crashed down across the table.

Diners sprang to their feet, shouting hoarsely. Stewards and officers came running toward the table. Rab Crane bent swiftly over the young man's body, sniffed at the strange odor that rose from his lips.

Crane straightened, reached for the salt-cellar on the table, sniffed it. His table-mates watched frozenly.

"He's dead—poisoned!" Crane said, finally.

As an officer stooped to lift the body.

"Don't touch him with your bare hands!" Crane cried.

For the body of the poisoned man was beginning to glow faintly, his face giving off a feeble, eery white light!

"Gods of Mars!" cried little Kark Al horrifiedly. "Look at that body—look—"

"This man was poisoned with a super-powerful radium salt," Rab Crane declared to the horrified officers. "He died instantly in awful agony and his whole body is charged with radioactive force now and will have to be handled with lead gloves. Someone substituted the radium salt for the ordinary salt in this salt shaker."

LALLA DEE looked up at Crane with wide, terrified dark eyes.

"Then maybe it was someone trying to kill *you!*" she said. "The poison couldn't have been intended for any of the rest of us."

Crane knew what she meant. Only Earthmen, out of all the Solar System's peoples, were habitual users of salt. He knew well that the poison had been intended for him—and that someone at this table had made the substitution!

Yet he said, shaking his head, "There's no reason why anyone would want to kill me. I'm just an ordinary importer. No, this young fellow must have had some enemy who took this means to kill him."

"I'll swear that I filled that cellar with ordinary salt today!" said the table-steward hoarsely.

"The whole affair will have to be investigated by the captain," the third mate of the *Vulcan* said crisply, "meanwhile send for a hospital detail to remove this man's body."

As the body was carried out by lead-gloved attendants, Kark Al said sickly:

"I—I guess I'm not hungry after all. I'm going to my cabin."

"I don't want to eat now either," the white-faced Lalla Dee told Rab Crane. "That awful scream—"

In fact, they had all risen from the table except Jurk Usk, the Jovian, who kept his seat and was awaiting his dinner with the surly immobility of his race.

Rab Crane, as he followed the Venusian girl toward the door of the saloon, noticed that Kin Nilga was already disappearing ahead of them. The Saturnian seemed in a hurry.

Crane's mind was working swiftly. Someone at their table had Doctor Alph's brain. And that someone had tried twice, now, to kill him. Of those two things he was certain. But which one? He thought of those snapped necks—the huge physical strength of the Jovian and Saturnian.

He lingered behind Lalla Dee.

"Can you tell me which person at our table came into the dining saloon first tonight?" he asked the shaken table-steward.

"Kin Nilga, the Saturnian gentleman, sir. He was first at the table."

"I want to ask him if he noticed anyone lurking by the table when he entered," Crane said, and went on after the Venusian girl.

But as he moved along the dark promenade deck with Lalla Dee, Crane's excitement was mounting. Kin Nilga, then, had had the best chance of any of them to plant that deadly poison. And Kin Nilga also had the great physical strength that killer must have had.

Was the solemn-faced Saturnian the diabolical agent who had stolen the brain of Doctor Alph? Crane resolved to find out this very night!

Lalla Dee had stopped by the transparent glassite wall of the deck, and Crane saw that she was still shivering.

"That poor young man's face—I'll never forget it!" she said, her dark eyes clouded with horror. "I feel as if there is some horrible monster on this ship, lurking, hidden—"

"Nonsense! Whoever adopted that devilish method of murder was after one man," Crane told her. "And he'll be caught within a few hours." And to distract her attention, he pointed through the glassite wall. "There's a sight you'll never see on Venus."

SHE looked, and clapped her hands in entranced delight. In the vast black firmament of space burned the eternal stars, glorious blazing jewels in dark space. The ship was rushing through a constellated wilderness of suns. The rocket-tubes had been shut off and only the steady *beat-beat-beat* of the ventilation pumps came along the dark deck where Crane and the girl stood.

"It's unreal!" Lalla Dee cried. "I've often dreamed what it would be like to see the stars that we can never see through the cloudy skies of Venus, but I didn't dream it was like this."

She pointed to a calm, green speck of light shining large and bright, almost due ahead of the ship.

"That's Earth, isn't it? Is it really as beautiful as everyone says?"

"I'm an Earthman, and my opinion is biased," Crane nodded. "But I think it's the most beautiful world in the System. Its snowy mountains and deep blue seas; its green fields and quiet forests and rivers and old cities—yes, it's beautiful. Beautiful and worth fighting for, worth dying for—"

He had spoken half to himself, his eyes brooding on that calm green speck. He became aware that Lalla Dee was looking at him intently.

"We're always proud of own particular world, aren't we?" he said.

They stared a little longer at the scene, then Lalla Dee turned from the wall.

"I think I'll go to bed," she told him. "I'll see you at breakfast, Mr. Idwal."

"A sweet kid," Crane thought as he left her at her cabin and walked on toward his own. Then the perilous task ahead of him claimed his thoughts. He must search Kin Nilga's cabin.

As he sat in his own dark cabin, waiting for the liner's passengers to retire, Crane's mind grappled with what lay ahead. If Kin Nilga was the possessor of the stolen brain, then entering the Saturnian's cabin was dangerous.

But he had to do it! Every hour that passed brought the *Vulcan* nearer Earth where Kin Nilga could easily trans-ship to another liner and throw him off the trail. And every hour increased the chance that one of the killer's diabolical attacks would take his

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life. Crane waited two hours, until silence filled the corridor. The last passengers had sought their cabins and only the ship's officers and men on duty in the control and rocket rooms remained up.

Then quietly the TSS man slipped out of his cabin, his hand resting on the hilt of his beam-pistol.

Except for the droning throb of the air-pumps, there was no sound as Rab Crane approached the door of Kin Nilga's cabin.

He stopped abruptly, stiffened, as he came opposite it. That door was slightly open. And from inside the Saturnian's dark cabin came a hoarse, smothered cry!

Crane shoved the door wide open, pistol aimed. He glimpsed a shadowy figure bending over the bunk, and even as he looked he heard a *snap* that could be only the dull cracking sound of a breaking neck!

Crane knew, in one swift flash of insight, that he had been wrong. Kin Nilga was *not* the killer! The real murderer was this squat, shadowy shape who had just slain Kin Nilga!

Crane rasped, "Stand where you are or I'll kill you!"

The shadowy killer turned, started across the dark room toward him with quick, heavy steps.

"Stop or I'll fire!" Crane warned. And when the shadow did not pause, the TSS man pulled the trigger of his beam gun.

The thin white beam from his pistol knifed the darkness of the cabin and struck the shadowy, indistinct form of his opponent squarely.

Yet the killer came on! Though Crane fired his deadly beam again straight into the advancing slayer, the shadow did not even falter as he lunged through the gloom at Crane!

CHAPTER III

Voice of the Brain

CRANE was so stupefied by the failure of his beams—which should have killed any living thing at this close range—to halt the killer, that he nearly lost his life. Before he turned to escape the remorseless figure had reached him.

Hands grabbed Crane in the most powerful grip he had ever felt, bruising his flesh to the bone by the tremendous strength of their grasp. He cried out hoarsely, struggling in the dark against that terrible clutch.

The grip shifted to his neck as Crane fought futilely to escape. Even as he struggled the TSS man knew that another moment would see his neck snapped, as those of the guardsmen of Doctor Alph's house had snapped.

But his cry had been heard, and the alarmed voices of passengers in other cabins were suddenly audible. The killer, apparently alarmed, flung Rab Crane aside and leaped out of the cabin, his heavy steps receding rapidly down the corridor.

Crane, stunned by the impact and bruised by the other's iron grasp, staggered out of the darkened cabin as the people burst into the corridor and the lights were snapped on. The second mate of the *Vulcan* cried:

"What's the matter here—" He shoved past Crane into the cabin, snapped on a light.

He stared at the bunk in which Kin Nilga the Saturnian lay dead, his great neck snapped like a straw, then recoiled in horror.

Then he turned on Rab Crane who was staggering, disheveled and bruised.

"Why did you kill the Saturnian?" he snapped.

"I didn't kill him," said Crane. "I heard a row in here and came in. In the dark, the man who killed Kin Nilga jumped me, then escaped."

"A likely story!" cried the officer. "There's been a mysterious explosion and two murders on this liner since we left Venus. The explosion was in your corridor, the first murder was at your dining table. And now you're found over the body of the second victim . . . You're under arrest!"

He had drawn his pistol, was covering Crane with it. Stunned by this disastrous turn of events, Crane saw the difficulty of his situation. He dared not tell them he was a TSS man, or that he

sought the great secret from the stolen brain of Doctor Alph. This liner was a Venusian ship and once these Venusians learned the brain was aboard, they'd search to the last corner to get it and its secret for Venus. Then he would be through and the secret lost forever.

"I'm sure you're wrong about Mr. Idwall," a girl's dismayed voice was telling the officer. "He was nearly a victim of the radium poison himself, in the dining saloon."

It was Lalla Dee who was defending him.

Kark Al, the withered little Martian, nodded corroboration, snapping, "It's stupid to accuse Mr. Idwal of these killings."

"That will be for the captain to decide," the officer said inflexibly. "You'll have to come to his office at once," he told Crane. "The rest of you people return to your cabins."

As Rab Crane was forced by the officer's gun through the crowd of curious, horrified passengers, he managed to smile reassuringly at the pale, distressed Lalla Dee.

The TSS man's eyes were searching the crowd for Jurk Usk, the Jovian who had sat beside Kin Nilga at the dinner table. The Jovian, then, and not the Saturnian, must be the killer. No one else on the ship, now, but the Jovian *had* such strength. And he could not see Jurk Usk anywhere.

HALF hour later, in the captain's office, the veteran, space-tanned Venusian who was master of the *Vulcan* faced Rab Crane.

"Mr. Idwall, all the evidence points to you as the murderer of Kin Nilga and of the Earthman," he said. "A search of Kin Nilga's effects has revealed that he was a member of the Saturnian Secret Service. It is obvious that you are a criminal he was pursuing, and that you tried to kill him in the dining saloon tonight, failed and succeeded later in killing him in his cabin. A table steward has said you questioned him about Kin Nilga's movements."

"But how *could* I have broken his neck like that?" Crane protested desperately. "No Earthman has such strength."

"I do not know just what means you used to murder him," the captain told him unrelentingly, "but your guilt is obvious. You will be imprisoned in the ship's brig until we reach Earth, where you will be turned over to the space-court for trial."

Crane was led away, down to the lowest deck of the great liner, and thrust into a narrow metal cell on a little corrider off the rocket rooms. He sat down heavily on the bunk.

In the dark cell, silent except for the steady throb of the ventilator, Crane wholeheartedly cursed the turn events had taken. Imprisoned here, he had no chance of securing the stolen brain before the *Vulcan* reached Earth.

It was plain now that Jurk Usk was the man he sought; that the squat surly Jovian was the shadowy figure who had stolen Doctor Alph's brain. Kin Nilga, an agent of Saturn, had been on the trail of the brain just as Crane was. Jurk Usk had killed Kin Nilga, and tried to kill Crane. Why, he asked himself, had his beams not affected the Jovian? And had it been Nilga or Usk who had killed the Doctor and his guardsmen?

Now, Crane thought hopelessly, the Jovian had a clear field. Kin Nilga of Saturn was dead and he, the agent of Earth, was in prison for the rest of the voyage. When the ship landed, Jurk Usk would go free with the brain and its doom-freighted secret.

That night passed slowly for the tormented TSS man. And after morning came—the morning of a space ship, marked only by the turning on of all the ship's lights—Crane's numbed brain fought frantically for a plan.

Gradually fierce resolve began repossessing him. The men of the TSS did not give up until they were dead! And this mission of his was the most important any man of the Terrestrial Secret Service had ever been assigned. He must not give up! He would not, while he was alive!

He stared around the cell with narrowed, desperate eyes. If he could just get out of this rat-trap, just get to the cabin of Jurk Usk. . . .

He *could* get out! The inspiration came to Rab Crane's taut brain in a flash. It would be a desperate way of escape, and perilous. Yet it was the only way, and he would try it!

He was startled out of his quivering intentness by a light knock, a voice outside the locked door. Through the barred opening, Lalla Dee's soft face looked in at him.

The Venusian girl's dark eyes were troubled and anxious.

"They let me come down to see you for a few moments!" she said. "Oh, I know you're not guilty of these murders!"

Crane's nerves relaxed a little. He even managed a grin.

"Good kid," he told her through the bars. "I'm not guilty and I can prove it when we reach Earth. But there're more important things at stake than my own fate, just now."

He pressed closer to the bars, lowering voice.

"Lalla Dee, I want you to do something for me. Will you?"

HER head bobbed, her clear eyes looking anxiously into his.

"I'll do anything I can," she promised.

"I want you to find out for me just what cabins are occupied by those who sat at our dining table last night," he said.

"Why, I don't see—but I can do that, all right. Wait, I'll go now," she said.

She departed and Crane waited tensely. He had not asked her simply for the location of the Jovian's cabin, because he did not even want her to suspect his paramount interest in Jurk Usk. The girl must not become involved in his desperate scheme.

She was soon back, obviously still perplexed by his request but with the information he wanted.

"The cabins are all on the second cabin-deck, like yours and mine," the girl told him. "That of Jurk Usk is two doors off the main corridor, toward the stern. Kark Al, the Martian, is three doors beyond that. And the cabin of the young Earthman who was poisoned is directly opposite the Martian's. You know where the rest are."

"I know," Crane said swiftly. "You've helped me a lot, Lalla Dee. I want you to go back up now and forget all about this, and no matter what happens to me, don't you say anything that will get you mixed up in this affair."

"Norman, you sound as though something awful might happen to you," she told him distressedly. "What is it?"

"I'll be all right," he repeated. "And you're a swell girl, Lalla Dee."

She left and Crane paced the floor, seething with excitement. If he could just get to Jurk Usk's cabin.

He waited impatiently for the coming of the ship's night. When finally the lights had been turned off and the passengers had retired, and the whole craft silent except for the occasional passing step of a sailor and the throbbing of the ventilators, Rab Crane began to act. First he removed his shoes and sox.

Then he twisted with all his strength at one of the metal posts that supported his bunk, until he tore it loose. With this short, thick club in his hand, he climbed upon the now shaky bunk and reached up toward the grating of the ventilator-tube.

The tube was almost two feet across, a round pipe connected with the main ventilation system which dispersed oxygenized fresh air constantly to every room in the ship. Crane inserted his club in the grating and pried. The grating came loose with a little snap, and he poised, listening. But, apparently, no one had heard.

He stuffed the club into his trouser band and drew himself up into the ventilating tube. He got one shoulder in, then the other. The tube was a terribly tight fit but he inched steadily forward in it. In his face beat the constant flood of fresh, tangy air, and in his ears throbbed the distant pumps. Soon the tube opened into a vertical pipe, a somewhat larger one leading up to the decks above. Crane climbed slowly up this, bracing himself with bare hands and feet against the smooth sides.

Blindly he wormed upward in the dark pipe until he came to the place

where a branch tube led horizontally into the second cabin-deck, his goal.

Now he began to count the branch tubes that led off into the separate cabins. Two branches further should be the tube leading to Jurk Usk's cabin. And Jurk Usk, no matter how diabolical his ingenuity, would never expect death to come to him through the ventilator!

STEALTHILY Crane inched forward and into the second branch tube. At its end was a light grating. Crane peered down through this into the dark cabin of the Jovian, located the dark bulk of the bunk.

Crane gently opened the grating and dropped soundlessly into the cabin. As he landed, Jurk Usk awoke!

Like a wildcat, the TSS man sprang. As the Jovian sat up, the club fell on his head and he sank back, stunned.

Swiftly Crane tore strips from the blankets and bound and gagged the man of Jupiter. Then he turned on the lights and looked around the cabin, his heart beating rapidly.

"He must have the brain somewhere in the cabin," Crane told himself as he started a swift search.

Ten minutes later he stopped, thunderstruck by the results of his search.

"Good God, the brain *isn't* here! Then Jurk Usk isn't the killer, after all!"

He had searched every cranny. The brain of Doctor Alph was not here, and his inspection of the Jovian's belongings had convinced Rab that Jurk Usk was really what he claimed to be—a shipping magnate and not a secret agent.

Then neither Kin Nilga nor the Jovian, after all, was his deadly opponent! Yet they were the only men on board with the enormous strength the killer possessed. If neither of them was the murderer, who could be?

The logical answer to that question forced itself on Rab Crane's brain. He could not believe it, could not understand it, yet it rose before him with the cold force of reason. Glistening perspiration broke out on the Earthman's bronzed brow.

Leaving Jurk Usk bound, Crane climbed back into the ventilating tube and inched onward again through the great pipe.

Slowly, silently he crawled forward, turned off at the third next branch tube. Again Crane wormed toward the grating opening into a cabin. And this cabin was lighted.

Even before he reached the grating, Crane heard a voice that made his hair stand on end. A thin, monotonous metallic voice, utterly without expression.

And it was pleading tonelessly, "Why do you not kill me now that you have my secret? Please kill me—please kill me—"

Rab Crane had found the stolen brain at last! For this voice he heard was the mechanical loud-speaker voice through which the living brain of Doctor Alph was speaking!

CHAPTER IV

Yellow Doom

EVERY nerve quivering, Crane inched forward. At last he stopped, his face almost against the grating, peering down into the lighted cabin. His gaze riveted on a table that stood between the bunk and a wooden crate.

On that table stood the thing he had risked his life to trail—a black metal case eighteen inches square. It had recording-dials in its face, a tiny microphone earphone, and the round diaphragm of a small loud-speaker. And inside that innocent-looking case, in its preserving serum, still lived the brain of Doctor Alph!

And Doctor Alph's brain was still speaking in that dreadful, toneless voice.

"Kill me! Please kill me—"

"Not yet, my dear Doctor," mocked the man standing in front of the brain-case. "The death you crave will not come until I have completely tested this secret of yours."

That mocking man who spoke, the diabolical brain-thief and murderer, was Kark Al, the little Martian!

Crane even now could not believe his eyes. How *could* this little wisp of a Martian have broken men's necks with his bare hands, have withstood the fire of his beams unhurt?

It seemed impossible! Yet, somehow, it had been done. Even though Crane could not comprehend the explanation, he knew that at last he looked on the man he sought.

Kark Al's eyes were cruel pinpoints behind great spectacles. "If you have tried to deceive me," he told the brain warningly, "if you have not told me all your secret—"

"I have told you all. You have made the culture for yourself," said the brain thinly. "Kill me and release me from the torture of this horrible existence!"

Rab Crane was softly releasing the catch of the ventilator grating. He had no weapon but the club and this withered little Martian was the most resourceful and remorseless killer he had ever encountered.

He crouched in the tube, stealthily opening the grating. Then the grating came loose too suddenly and slipped from his hand, falling to the floor with a clang. Kark Al whirled—

And Rab Crane sprang! He shot out of the tube like a living projectile, propelled by a terrific effort of his hunched muscles. He landed full on the Martian just as Kark Al drew his beam-gun.

They crashed to the floor together. The Martian was cat-like in his quickness, but Crane was fighting with madness born of desperate urging, and the withered little red man was no match for the Earthman's strength.

Crane tore the gun from Kark Al's hand, broke loose from the Martian and covered him with the weapon.

"Stand still, Kark Al!" he told him. "My beams didn't seem to hurt you last night, for some reason, but I think that if I fire them into your face now, you'll die."

Kark Al's enormous spectacles glittered at Crane in calm curiosity. "Crane, the Earthman," he said coolly. "It was ingenious of you to come through the ventilator. I congratulate you."

"Yes, Crane the Earthman," Rab Crane said savagely. "And I'm taking this brain and the secret it gave you, for Earth!"

THE brain of Doctor Alph spoke rapidly in its toneless voice:

"That secret is not for any planet, Earthman! It means doom for the rest of the Solar System if it is ever released by any planet. You must destroy it—and destroy me!"

"What is the secret?" Crane asked tensely of the square black case, his gun held steady on the coolly smiling Martian.

"It is death itself, for all organic life it touches," the mechanical, metallic voice answered. "A new kind of bacteriophage, a strange, semi-organic microscopic life which ordinarily preys only on bacteria. I, Doctor Alph, developed this new species, and it preys not alone on bacteria but on *all* organic life, expanding with incredible rapidity as it assimilates food.

"A mere pinch of this deadly new bacteriophage culture dropped on a plant would be enough to destroy rapidly all life on that planet! The culture would spread like lightning, enveloping and devouring all organic matter like a flame of death running across that world. And Kark Al has a vial of the culture in his pocket! When he stole my brain, he also stole a tube of the death culture. That vial in his pocket can sweep whole worlds clean of life!"

Crane staggered beneath the dreadful revelation.

"God in heaven!" he whispered to the Martian. "And you would use *that* as a weapon of Mars, against other worlds?"

He thrust out his hand, his eyes blazing with the trembling fury he felt.

"Give me that vial!" he said.

A gun-muzzle abruptly prodded Crane's back and a low, clear voice said:

"No, that vial goes to *me!* Drop your gun!"

Dazedly Crane let the pistol fall from his hand. He turned slowly.

Lalla Dee, the Venusian girl, had silently entered the cabin door behind him and was covering both him and the

Martian with a beam-pistol.

Her face was no longer that of a soft, pretty school girl but was chiseled in lines of stern resolve.

"Lalla Dee!" cried Crane. "What does this mean?"

"It means, Rab Crane," she said steadily, "that just as you work for Earth, and Kark Al for Mars, I work for Venus! Yes, I'm a member of the Venusian Secret Service. Headquarters sent me on this ship at the last minute when they learned that Doctor Alph's brain had been stolen. We had been trying to get Doctor Alph's secret for ourselves, of course, and knew that the thief would try to get away on the first ship.

"I thought at first that you had the brain, but I soon saw that you didn't—that you were on the trail of it just as Kin Nilga and myself were. So I watched you, thinking you might know enough to lead me to the person who did have it. And you've done so. When you asked about the cabins tonight, I kept watch outside them."

She held out her hand to the smiling little Martian.

"The vial of culture, Kark Al," she said. "It and that brain go back to Venus."

"Lalla Dee, you'll have to kill me before I'll let you get the culture and the brain, to be used, perhaps, against Earth!" Rab Crane cried.

"I'm sorry, Crane, really," she said. "But just as you love Earth, so do I love Venus."

"You two need not continue the useless argument," Kark Al said. "The culture and the brain go where it has always been destined that they should —to Mars."

"You think you can keep them even now, with my pistol covering you?" Lalla Dee said incredulously. "You're mad!"

Kark Al chuckled. "Your ridiculous beam-pistols! Do you think such toys are of any use when you are fighting me, Nald Arkol?"

"Nald Arkol of Mars!" Crane's exclamation of amazement was echoed by the astonishment of the girl's widened eyes, as they both stared at the withered little red man.

FOR they knew that they stood face to face wtih the most mysterious and dreaded interplanetary spy in the whole Solar System—the head of the great Martian Secret Service, the ice-hearted super-spy whom no man had ever seen but about whom every secret service man had heard terrible legends.

The little Kark Al was glittering at them amusedly.

"I see that you have heard of me," he said. "Do you still think a stupid beam-gun is enough to fight *me?*"

He laughed harshly.

"No, it is time to end this little comedy. *Seize them, Thoh!"*

In answer to his shrill order there rose suddenly out of the wooden crate beside the table, a squat, horrible figure. It was human in shape and wore grotesquely the clothes of a man. But it was not human. It was a metal robot! A mechanical man!

The robot sprang toward Rab Crane and the Venusian girl. Lalla Dee fired at it. The beams hit the robot squarely, splashed off. It was made of some rare metal impervious to ordinary atomic beams. In the next instant it had seized Rab Crane and the girl, was holding them helpless in its huge metal arms.

"Now you know how the men in Doctor Alph's house were killed," Kark Al exclaimed triumphantly. "Also Kin Nilga, the Saturnian spy who had learned I had the brain and whom I had to kill for that reason. This robot, Thoh, whom I smuggled aboard as machinery samples, can be operated by direct order or remote control.

"And now he and I and the brain —and you two prisoners, also—are going to leave the *Vulcan!* A Martian naval cruiser has been secretly trailing this liner, waiting to pick me up when I leave the ship. I'm leaving now and taking you two with me. If I left you here dead, someone might read from your brains the nature of our new secret weapon. Aboard the cruiser, I'll torture valuable information from you, then destroy you completely. And then—"

The eyes of Kark Al expanded in blazing emotion that held the helpless man and girl paralyzed.

"Then the deadly culture and the secret of Doctor Alph will go to Mars. And some day ships of Mars will go forth and drop a death vial like this one on each of the other planets! We'll sweep all the rest of the Solar System clean of life. Then our people can go forth and take every world from Mercury to Pluto for ourselves. Everything—all the Universe for Mars!"

Rab Crane struggled wildly in the robot's inflexible grasp.

Then he opened his mouth to shout for help. Better anything than that Kark Al keep the secret.

"No! You do not give an alarm!" Kark Al hissed, and sprang forward with pistol raised butt foremost.

It crashed down on Crane's head in a stunning blow and the TSS man knew nothing more.

When he returned to consciousness he found himself wearing a heavy flexible metal suit. A space-suit! Its glassite-fronted helmet was on his head and he breathed tangy oxygen from the tank inside the air-tight suit.

Crane tried to rise and found that the wrists of his space-suit were tied together. Beside him lay Lalla Dee, unconscious and similarly clad in a space-suit, also bound. They were in one of the *Vulcan's* space-locks, both inner and outer doors closed.

Then Crane saw Kark Al. The Martian was getting into another space-suit. The great robot stood motionless beside its master.

Kark Al bent over Crane finally, said coolly in his muffled voice, "Thoh got you from my cabin to this space-lock without anyone in the ship seeing us. Now we are leaving the ship!"

The Martian, once inside his suit, quickly secured a chain to his belt and tied it to the waists of the others so that he and the two prisoners and the robot formed a human chain.

THEN Kark Al quickly took down from the rack beside the row of space-suits, a hand-rocket—a small affair whose reactive push was enough to move several people in the void.

Kark Al touched a button and the outer door of the lock slid open. The air in it puffed out with a sharp sound, and they looked out into the star-gemmed blackness of space.

Rab Crane saw now that the Martian had slung from his shoulders a square insulated case which he knew contained the brain of Doctor Alph. And as he realized that the Martian was achieving final success, he tried desperately to attack him.

But Kark Al at that moment stepped calmly out from the lock into empty space! The chain at his belt yanked Lalla Dee and Rab and the robot after him. They all floated there in space, a human chain, scraping the hull of the huge liner as it forged onward.

Kark Al's hand-rocket flashed flame, its impulse dragging them all forward. They moved outward from the liner, pulling away from its gravitational drag. The stern of the liner dwindled swiftly until only its lights were visible, and then those too v a n i s h e d. The *Vulcan* was gone! They floated alone here in space, the Martian and his two bound, helpless prisoners and the great impassive robot, who needed no space-suit because he did not breathe. Kark Al no longer used his hand-rocket, now that they were free of the liner. Crane knew that he was waiting for the Martian cruiser to reach them.

They turned slowly as they floated there, the immense starry firmament seeming to revolve around them. Rab glimpsed Lalla Dee's white face, conscious now, through the glassite front of her helmet. His own heart was numb with the cold of ultimate failure.

A few lights appeared against the stars in the direction opposite that in which the *Vulcan* had gone. The lights came closer and Rab saw they were those of a long, grim black spaceship coming slowly and cautiously through the void. The Martian cruiser that had been secretly trailing the *Vulcan!*

Kark Al flashed his hand-rocket three times, then repeated the signal. The Martian cruiser veered, came toward them, its bow rocket-tubes firing to brake its speed. The human chain was drawn slowly toward the cruiser by its gravitational attraction. Soon they bumped along its metal side.

Kark Al drew them toward a space-

lock that waited, open and ready. He jerked them inside and shut the outer door. Air hissed into the lock from storage tanks. Then the inner door of the lock opened and into it ran a half-dozen men, red-skinned, bristling-haired Martian officers in the gray uniform of their planet, and pulled them into the ship's inside.

One of them was the captain of the cruiser. Excitedly he helped Kark Al out of his space-suit. Crane and Lalla Dee, still in their suits, lay beside the silent robot.

"Nald Arkol, did you get the great secret?" the Martian captain cried.

Kark Al's eyes flashed behind his spectacles as he answered, pointing to the square insulated case he had brought.

"Yes, I got it! The brain of Doctor Alph and his secret!"

He drew from his pocket a metal tube and took out of it a glassite vial filled with a yellow, fluffy substance.

He held it up proudly.

"Gentlemen, this is the secret that will make our planet sole master of the Solar System. This culture will destroy all life on every world, and give us all nine planets for our empire!"

The Martian officers cheered wildly, their faces flaming.

"The day of Mars has come at last!" they yelled.

RAB CRANE'S brain was a turmoil as he looked through his helmet at the vial Kark Al held aloft. The deadly culture—and it was in a glassite vial! The TSS man saw, in that instant, the superhuman chance to snatch eight planets from the jaws of doom!

He took that chance! With one wild upward lunge, Crane threw himself forward. His tied metal-clad hands struck the vial in Kark Al's grasp and knocked it to the floor. The glassite vial tinkled to shattered fragments.

"Gods of Mars!" screamed Kark Al as the vial broke. Then death was on him, was on them all, and those were his last words.

The fluffy yellow substance on the floor seemed to explode outward over the Martians, expanding with the speed of light, covering them with a thick blanket of yellow fluff faster than the eye could follow.

It was the deadly bacteriophage Doctor Alph had cultivated, multiplying with the incredible speed the scientist had spoken of, devouring the flesh of the Martians like flame devouring tinder!

Kark Al and the other Martians were already indistinguishable, disintegrating mounds of yellow fluff. The stuff covered the helmets and space-suits of Rab Crane and Lalla Dee but could not penetrate through their air-tight glassite suits.

Crane brushed the yellow fluff wildly from before the eyes in his helmet, saw that the incredibly expanding bacteriophage had puffed out through the whole interior of the Martian cruiser. He could hear dim screams as every man in the ship, every atom of organic life, was fastened on and devoured by the culture.

Then, in a short while there was silence inside the cruiser. The Martians were gone, devoured. The ship held only the masses of ravening yellow life that had destroyed them!

Crane staggered close to Lalla Dee.

"Try to unbind my wrists," he said in a muffled voice, through the helmet. "But for God's sake don't open your suit in the slightest or you're doomed!"

"I'll—I'll try," said the Venusian girl shakenly.

Her trembling bound hands finally managed to undo the bonds around Crane's wrists. He unbound her, then, and released the chain that had tied them to Kark Al and the robot.

The huge robot, Thoh, still stood immobile beside them. The mechanical man's metal body had not been affected by the devouring bacteriophage, but he had received no order from his master to act, and had not moved.

Crane pushed Lalla Dee into the space-lock and told her:

"Take a hand-rocket and get as far out in space from the ship as you can. I'll be with you in a moment."

She obeyed, opening the outer door of the lock, stepping out into the void and using the hand-rocket she had picked up to propel her away from the Martian cruiser.

In a few minutes she saw Crane's space-suited figure leaping out of the space-lock, using another hand-rocket. She met him, grasped his arm as they floated together at a distance from the cruiser.

"What did you do?" she cried to him, her voice conducted to him by their touching space-suits.

"I made sure that that cruiser will never drift onto any world and loose that awful plague there," he told her. "I laid a fuse to its tanks of rocket-fuel."

Even as Crane spoke, the distant Martian cruiser suddenly burst into terrific light, a destroying explosion that flamed for a moment like a new sun, then vanished.

"That destroys the plague on the cruiser," Crane told her. "Now for ourselves—the culture is smeared all over our suits."

HE took his hand-rocket and with its flame carefully seared every square inch of the outside of her metal suit. Lalla Dee did the same for him. The last germs of the deadly culture had been destroyed.

"Before I laid the fuse, I used the cruiser's radio to call the *Vulcan*," Crane told her. "They're turning around to come back and pick us up."

"And Doctor Alph's brain perished in that explosion too?" Lalla Dee cried. "No one else will ever find the secret of that culture?"

"No one else, thank God!" said Crane. "It's a power too great for any world to have."

"I'm glad that neither of us won this game, man of the TSS!" she exclaimed. "And I'll give the *Vulcan's* officers an explanation that will satisfy them, without letting them know the truth."

"Look, there comes the ship now!" he said, pointing.

Far off against the solem stars, the lights of the returning *Vulcan* were showing. But Rab Crane was gazing past them, toward the distant green light-speck of his own world. No one there but his Chief would ever know the danger that had threatened that smiling world—and that had been averted.

Only the Chief would ever know, and all the reward that Rab Crane would ever get from him would be a little longer, stronger handshake than usual.

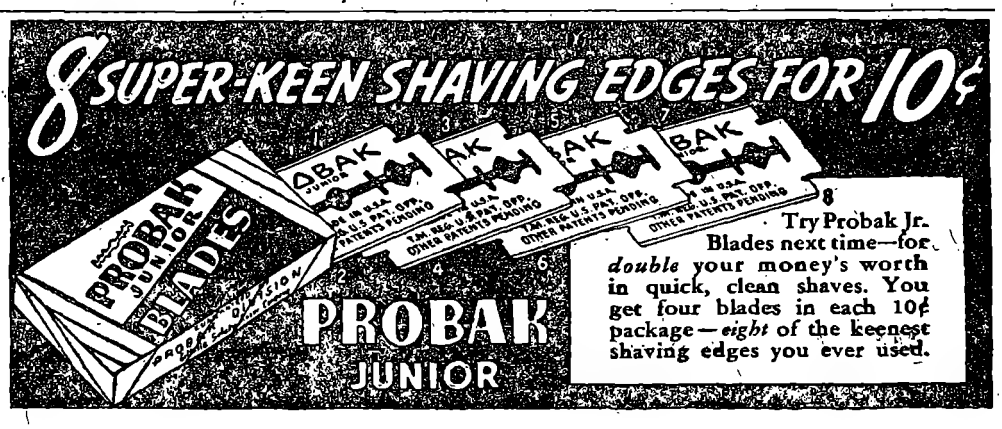
But that was reward enough for a man of the TSS.

IN THE NEXT ISSUE

DOOM WORLD

A Novelet of Tomorrow's Movie Makers

By HENRY KUTTNER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THE REINMUTH RIDER

Mysterious Vibrations of Pure Thought Trickle Through the Ether!

By
JOHN VICTOR PETERSON

Author of "Ra for the Rajah," "Martyrs Don't Mind Dying," etc.

Everything seemed to flare up in a blinding cosmic cataclysm

THE moon—dead, eternally mysterious. Yet tonight it shall give forth the strange secret which I alone know and which I have, until now, preferred to leave untold.

I can see it rising silvery and full over the eastward mountains, shining over this range whereon my cabin sits, illumining the valley. Below and to the west, the little airport is proudly outlined in crimson boundary lights; up behind the hangars, the radio range towers blaze in red-and-white dignity against the distant shadows of the mountain gaps around Bellefonte. Inside the range station the radio beam clicks, keeping whatever aircraft disturb this glorious night straight on the Newark-Cleveland run. The quiet, everyday efficiency of modern science.

The houses down in the Gap are brightly lighted, as are the scattered homes up and down Nittany Valley. Over at the Park most of the young folks are dancing and drinking and having a grand time. Mary Ellen's there with Ralph, I guess, probably sitting in the park listening to the swing-time music from the pavilion and thinking that the moon is very, very beautiful.

Beautiful, yes—and more promising than it has been for a hundred million

years! Promising even greater peace and security than this for all of earth!

It seems to be rising more swiftly tonight—as if it is in some great, cosmic hurry to have done with what must be done. It really isn't, of course. The rhythm of the system is unchanged. Just my shattered nerves, I guess, and my imagination. Computations tell me that the silvery orb will be at the zenith in respect to this longitude at 11:03—the strangely alien accumulator plates and grids are angled squarely towards that sector.

My hands are clammy near the master switch which will stimuluate the condensers, making them receptive to whatever may come pulsing across the airless void. I'm wondering if it is there, waiting; if it will come when the time is at hand? And if it does come, what then? *What then?*

SEVEN days I would have thought the whole thing mad—the idea of me sitting here, alone, waiting for something which a lifetime of commonsense existence should tell me is impossible. I've always been a materialistic, two-feet-to-the-ground radioman—Henry W. Dalley, Operator-in-Charge of the Department of Commerce Radio Station at the airport, Chief Radioman in the Naval Reserve, a big, blond, handsome cuss—at least, that's what Mary Ellen used to say whenever I complained about the profile that some strong-jawed ancestor had wished on me.

Seven days ago I had dozens of friends over in town plus the one and only girl and went out practically every night to parties and socials; but now they think I'm crazy—up here alone in a heatless cabin, refusing to see anyone except Dave Bruce and Doc Todd, supposedly on sick leave. They only know what Doc and Dave told them—that an electric shock had ruined my nerves.

I can't tell them what really happened; people won't believe some things. Even Bruce knows a lot more than he's telling. You see, he was the only one who saw me the night it happened. We both know that there are some mighty strange people scattered throughout the recessed fastnesses of the Hell Stretch, but even they couldn't believe what I have been afraid to tell them.

Perhaps they'll understand after tonight—understand why I look as I do. I suppose my physical change is too great for man's credence, but perhaps it shall not have been in vain. Perhaps that which is coming will solve mankind's economic and social ills with its pledged panacea and repay whatever strength and years of life that I may give.

I recall vividly that miraculous telepathic advent of just a week ago:

The station was rather deserted that night. Bruce and I were on duty, holding down the graveyard watch from midnight until eight, I in the radio room, he in the weather bureau office. It was clear outside—clear and unlimited all the way to the Rockies. A perfect night for flying.

Commercial ships droned over occasionally, keeping contact with their company stations, riding the beam. There were no army ships in the air—the department gang usually keeps contact with army equipment—and nobody seemed to want to bother us at WWQ.

Dave was making up a weather map, and I was quite busy with three broadcasts per hour, listening to and reporting the interlocking ranges, getting my broadcast dope and putting it on the teletype during the "twenty-of" sequence each hour.

I went out about 1:20 to check Dave's temperature readings and, incidentally, let the cool night winds sweep the cobwebs from my brain. The night was beautiful, the Milky Way mistily mystic across a star-filled sky. The moon, in quadrature, was taking its apparent path down the western heavens. I stopped a minute, looking at the scarred old satellite, and thinking, as is a young moon-gazer's wont, of the one girl.

Suddenly something deep down inside of me went tense. Poetry and sentiment were banished. There, where the moon should have been in dense black shadow—there in the very heart of that dark quarter—*a light gleamed*—a tiny pinpoint like a hermit sun far

off in infinity. I thought of Coleridge's star within the "horned moon's nether tip," but that astronomical discrepancy didn't seem quite so funny now. There was something so eerie about it that my flesh creeped. I laughed a little shakily, incredulously—started to call Bruce.

ELECTRICITY snapped faintly upon the hangar's roof. I shifted my gaze. A scintillant flame shifted from the radio antennae and swung, a pointing, searching, pendulous finger, up toward the four range towers on the slope; then came swinging back. Just a little tight beam like that of a flashlight fully focused, visible for a few hundred feet up into the air where it seemed to fade away into the starshine.

I started to cry out. Then the finger struck at me, cut right into the very nerve center of my being—excruciating, pure, raw, unabating agony. Everything seemed to flare up in a blinding, cosmic cataclysm, and the little airport at Bellefonte was gone and there seemed to be nothing in all of the deeps of space but absolute darkness and constant, sweet, swimming pain.

It came out of that inky obscurity like an unseen projectile, smiting my naked brain with inconceivable force. Thought—pure, unadulterated thought! -- Words there were not, so I cannot interpret into speech its coming. There were tonal qualities in it—rich overtones of mysticism and supernal prowess—a running, tinkling tune of perfect accord and happiness against a ponderous, ordered background of concrete knowledge and polished skill. The cerebral emanations of something that was distinctly not human and yet was somehow akin to man in feeling, hence, in thought.

A pulsing beat came into that strange wave of thoughts. Questions came. Whole ideas. A planetoid recently hurtling through space, passing dangerously close to Earth. My brain was goaded into action. Planetoid? Of course! I thought of "Object Reinmuth 1937" which passed within 400,000 miles only a few short months before—within five and one-half hours of striking our little world.

What, the beating query came, if upon that had been a vessel from outer space bound on exploration—a vessel whose occupant had sought to leave the planetoid and to reach Earth when it glimpsed that fertile world swirling in space? What if, its weak power system exhausted, it had been caught by the moon's lesser but closer gravity, and had been drawn to that satellite?

Purely rhetorical speculation, those thoughts. Whatever it was, something was telling me those things and I was inert, immovable in some dark, pain-filled void, listening.

From its own system—here it gave a vague thought-picture of a dying binary sun whose planets were growing cold and inhospitable, faster than the evolving races could acclimatize themselves to the change—this being had come through space via the planetoid, and, taking off from its carrier, had crashed before reaching the world it sought.

It had fabricated a beam similar to those common in its own system—a beam whereby thought waves and, with adaptations, both animate and inanimate objects might be transported over great, airless gulfs. It could send no material object, however, from the moon to Earth unless there were a suitable atomic assembler and radio wave receiver on the other end. Somehow, by a trange intuition, it had sought me out as being capable of constructing such an apparatus.

IT gave me strange instructions as to the machine's construction; an intricate pattern of wave condensers, vacuum tubes, electromagnets. A plan wavered into blueprint clearness within my brain. A command came with it—a stern, inexorable command, demanding utmost secrecy and immediate action.

In return for which were promises—promises of peace and security, plans for the abolition of war and discontentment, scientific secrets which would build a hateless Utopia on Earth—all the great knowledge of that distant system was to be man's future possession.

And then suddenly that black, limitless void was gone—all of it, the pain, the blackness, the pulsing thoughts—and I was lying beside the rainfall counter on the airfield at Bellefonte. Dave Bruce was standing over me, asking me *who I was and where was Henry Dalley?*

I told him to cut the kidding, that he knew damned well that I was Dalley. Hearing my voice, he seemed to gasp; then he leaned over to peer at me intently. A terrible oath escaped his lips; he recoiled as one horror-stricken, his eyes wide, white ovals in the moonlight, his lips parted, mute.

Struck dumb myself by the frightened aspect of his face, I got stiffly to my feet, pushed past him and entered the radio room. He followed, still silent.

I felt infinitely tired, numbed by a nameless paralysis, the reaction from that agonizing, all-pervading pain. I crossed to the mirror.

"Look!" I said. "Are you blind?"

And there, before that accursed glass, something tightened an iron fist on my heart. A moan was wrenched from my lips at the specter I saw. *My hair had turned pure white and my face was as drawn and sunken as that of an old, old man!*

"Henry!" Dave cried. "What happened? Oh, my God! How—" I dropped into a chair, buried my aching head in palsied hands. I sat there, stunned, quivering. My brain was a kaleidoscope of mad thoughts. And then suddenly they were soothed as if some great, soft, persuasive melody had stolen in among them. I felt no regret at whatever had happened to my body. I was thinking of the future, of the Rider out there alone in the bleakness of a lifeless and airless world, waiting and depending on me. My duty was to him and to the generations of mankind yet unborn. And so of him I said nothing.

"I can't tell you, Dave," I said slowly. "It's something you wouldn't—couldn't believe. No one else could, either. I'll call up Westervelt and get him to take over the watch. I'm going up to my cabin, and you please bring Doc Todd up as soon as you're off watch. Don't say a word about this until Doc has seen me."

TODD gave me a thorough physical examination that next day and told me to take it plenty easy. If he hadn't known better, he said, he would have taken me for a man sixty years old. He queried the cause, but I didn't tell him. I couldn't tell him of that strange beam message out of space. More rational things than that have proven men insane!

I told him I'd explain a week from that day. The week is up tomorrow. Meanwhile he's spreading the gospel that I have had a bad electric shock and must have complete rest. Of course, I couldn't let Lyman and Dick and, especially, Mary Ellen, see me like this.

Dave brought me all the stuff I needed. I didn't have to buy much—only a few adapters, small electromagnets and vacuum tubes. I had about everything in the line of radio equipment here already. I bought a dictaphone, too, so that I might record all that has happened and whatever will happen. Success or failure, mankind shall know of it.

I've been sitting here talking into the mouthpiece for almost a half-hour now and the moon is nearing the zenith. I've fastened on the headgear which, I believe, is for instructions during the transference, and my hands are at the switch. Yet, I'm suddenly afraid.

What is going to happen? What more can happen than that which has happened to me? What weird thing came across these two hundred and thirty-eight thousand miles to make me as I am? What will it do as it comes again? I'm wondering if, after all, it's worth the risk?

The signal tube is glowing. I can feel the Rider calling. I must answer. I'm closing the switch. I can hear the generator humming in the side shed. It's dying out and I can feel a vague thought coming. There's a cry of triumph in it, piercing as the amplified whine of a carrier beam. Oh, God, there's laughter ringing through it, loud, triumphant laughter. It cuts and sears like a white-hot file on raw nerve tisues. It's easing up now and sooth-

ing thought-pictures are coming, mystic, insubstantial—

I can see a promise of beautiful other-worldly things, peace and quietude, white and towering buildings, frail and gossamer bridges in the sky. I can see the paths of righteousness to which mankind is so often blind. Peace—the way to universal amicability and contentment!

Utopia—all that is perfect and good, the consummation of ideals, man at his glorious peak!

But, oh, God, the pain—the seething, boiling pain!

I FEEL as if the very life is going out of me, as if something is trying to crowd it out and usurp my body! Oh, can this then be? Can this be pure thought drained from the body of some other being? The ego, the consciousness, the very soul traversing some spatial carrier beam to take up its abode in my body?

The headgear—must remove it—can't; hands won't move—only pain—slicing pain.

And now I'm laughing, too, despite the agony—laughing at this universal, comic tragedy—I can't stand it much longer. I see my hands, wrinkled and blue and twisted, shriveling still more before my gaze; the strain of that alien mentality is blasting away the very substance of my being. After all, how could this—this Reinmuth Rider know man's puny mental capacity, man's weak physique, man's inability to possess, concurrently, two egos, two intellects? Thought—unlimited, radioactive—*but not entirely omniscient.*

*I'm blind—blind! It's coming with a flaming rush! A hell-wave—piercing, stabbing, tearing—Oh, my—**

---

*Note: This is the end of Henry Dalley's dictation. I arrived in time to hear him utter a horrible, soul-searing scream. A screeching, babbling, whimpering maniac running amok beneath the Congo moon is but a feeble imitation. I've heard both! And the body—that wasted, shrunken, half-incinerated corpse—I will not attempt to describe it. After conference with the proper authorities, I have destroyed the record. That scream—man was never meant to hear such as that! I've wished a million times that I had never heard it.—J. C. Todd, M.D.

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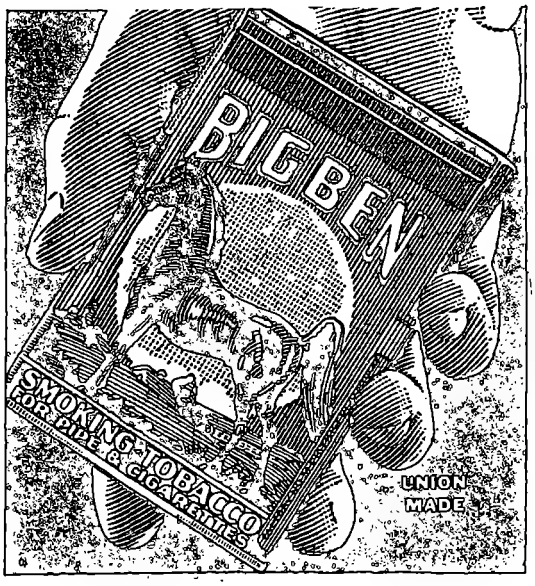

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"I deplore the loss of your good ship, Roman, but the goods shall

Willy Ley

be recovered. What is it my men have to look for?"

"Rugs," answered the Roman with the dignity befitting a wealthy merchant. "Rugs from the Orient and weapons, good Roman swords and shields, and succinum."

"Succinum?" repeated the diver.

"*Ita est, succinum.* From the frozen North, near the shore of a vast estuary of cold but steaming water, they dig it from blue Earth. Elektron, the Greeks call it."

"Elektor!" the diver repeated. "Sun-Glare from the frozen North, what the Arabs call amber."

"If you recover all I had on board I'll pay you one-tenth of the value," said the merchant. "Such is Roman custom."

"We are on Rhodes," reminded the chief diver with a smile. "Our laws protect us."

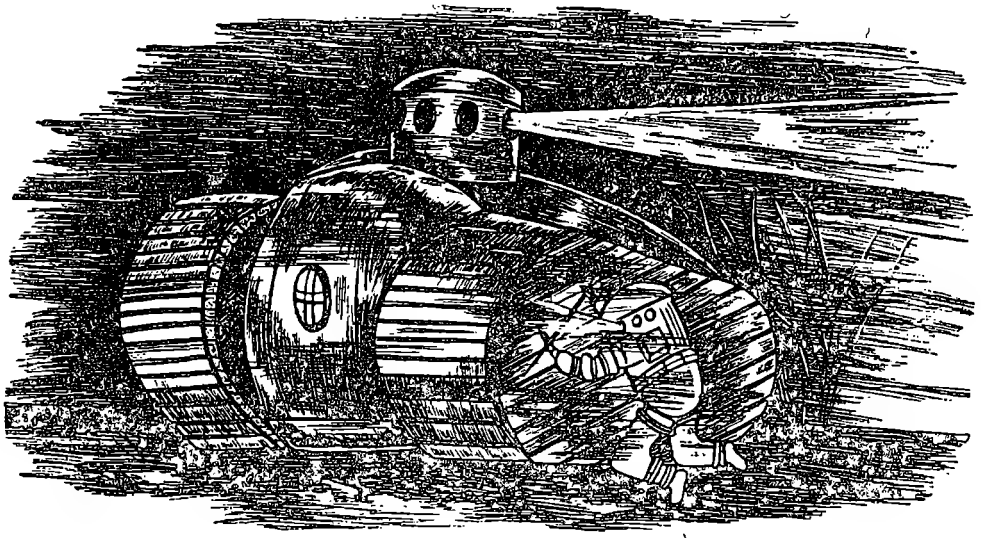
The Roman sighed. He knew these laws. If the water was eight cubits deep the divers could take one-third of what they recovered. Eight cubits was twice his own height. The water might easily be sixteen cubits deep; then the share of the divers would be one-half.

Fleetingly he thought of the *colimpha* in which it was said Alexander the Great had visited the bottom of the seas. But Alexander, the story went, had been confined in this barrel or whatever it was. He could look around, but that was all. One should have an open *colimpha,* thought the Roman with another sigh. Then these outrageous fees to divers would not have to be paid.

He did pay. There was nothing else to do.

The Past, Present and Future of Submarine

OF THE DEEP

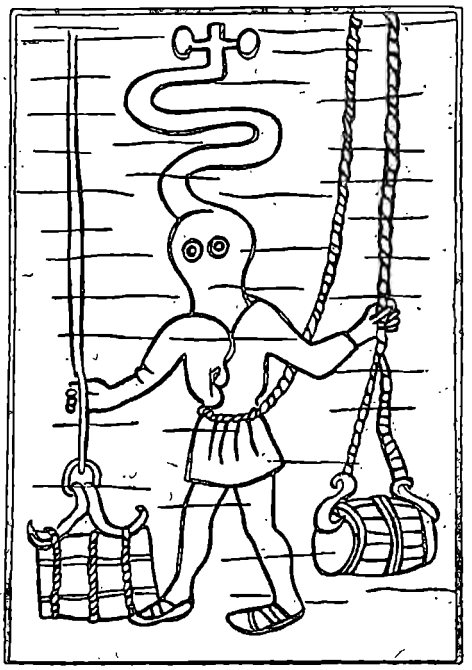


Pressure-proof underwater tank for surveying the bottom of the seas

After his return to Rome, Calicus, the merchant, happened one day to speak on the subject of *colimphas* to Fuscus, a man who spent all his time in libraries and in communing with philosophers. Laughingly Fuscus told him that he should visit a circus as soon as a new transport of wild animals from Africa had arrived. There he would see an elephant, an animal with a breathing tube that functioned even if the whole body and head were submerged. Aristotle, the teacher of Alexander the Great, the obese Fustus said, had suggested that such a leather armor for men should be constructed; an armor equipped with a breathing trunk.

The merchant decided at once to have such an armor built. And he did.

There was a pool on his estate in which the armor could be tried. Marcus, one of his slaves, knew this pool well. He could swim and dive and was not afraid to try the new armor. When the time came for the trial, Marcus marched into the water with firm steps. As long as his head was visible all was well. But suddenly, at a depth of only



Diving suit, said to have been invented by Aristotle, after the principle of a submerged elephant sticking its trunk out of the water for breathing. This picture is taken from a book from the year 1430

Exploration as Seen Through a Savant's Eyes!

two cubits (36"), the slave collapsed. He was dead when they pulled him out of the pool.

Calicus told Fuscus about the outcome of the experiment.

"It is strange," said the learned man. "Thrice I've heard of the leather armor of Aristotle being tried; thrice the men died. And every one of them died before reaching a depth that you and I could reach without armor. I do not understand it."

The merchant cared nothing for the scientific worries of his learned friend. Marcus had been a good slave worth many good coins. He would never sacrifice another man on foolish experiments. He did not care to acquire knowledge that did not pay.

He was a good Roman citizen. But he was also a merchant.

Nor could he know how long would be the day before an Austrian physician, Dr. Stigler, experimenting upon himself with a similar contraption, in 1920, discovered why it was inevitably fatal to try this type of diving suit. For the Austrian scientist, two thousand years later, was to find that the collapse was caused by the difference of pressure.

While the entire body of the diver was under high water pressure the lungs were only under atmospheric pressure. This caused a severe heart strain because most of the blood of the body was forced into the heart and lungs. Doctor Stigler was to find that a depth of one foot could just be borne, two feet were decidedly uncomfortable and in trying to stand six feet he experienced within ten seconds a heart strain that put him for three months in a hospital.

THE DIVING BELL
1662 A. D.

HE knew that his crew was on the verge of mutiny, that they would rebel if he did not give the order to return. He knew, too, that too long had he been deaf to their complaints; so reluctantly he gave the order.

And then William Phipps went to his cabin, locked himself in. He had failed, but it was hard to admit failure.

A carpenter by profession, Phipps had become a sailor for love of the sea and of ships. He had learned about that Spanish pirate vessel lying on the bottom of the seas not far from the mouth of the river La Plata and had offered his services to his king, Charles II. If he could only be given command of a ship, he had promised, the pirate loot would go to the crown.

The ship had been given to him; he had sailed to the mouth of the river La Plata. And now, failure. The Spanish pirate ship had simply disappeared. Some sea current had buried it under sand and mud. And the crew, weary, homesick and ill, had forced him to return.

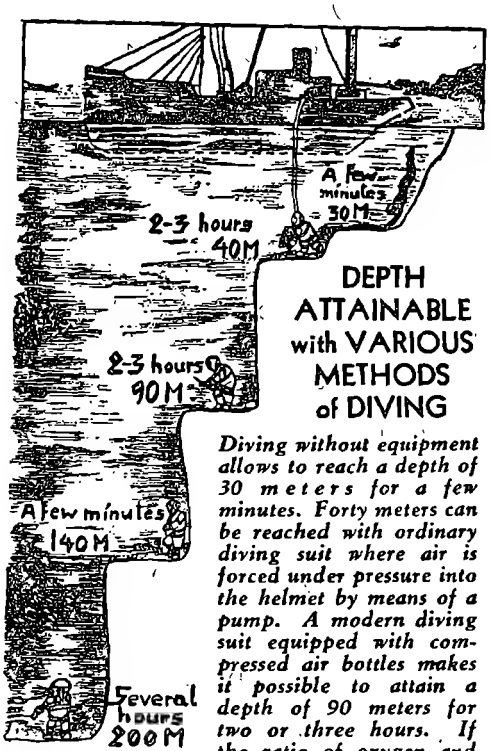
He knew that he would not be welcomed in England. But on his arrival there he promptly made a new proposition. Nobody listened. Obviously, the carpenter was mad. To go to the bottom of the sea and take air along to breathe? Nonsense!

Only one influential man listened. The Duke of Albemarle. He ordered built a contraption such as Phipps outlined, and tried it on the Thames. It was a diving bell, and much to the surprise of everybody—except the Duke and Phipps—it worked. This result encouraged the king sufficiently to send Phipps to South America again, this time with a diving bell.

But again the pirate vessel could not be found. Phipps was almost ready to admit failure for a second time when one day he noticed a bunch of sea-weed that did not drift with the tidal current. One of the Indians aboard was ordered to investigate. He reported that the weed had caught in a floating line, the other end of which was attached to a sunken vessel.

The diving bell was at once brought into action, and the first descent yielded a large bar of silver. Phipps was vindicated, and much of the pirate treasure was brought to England.

In spite of this success, however, the diving bell did not come into general use until Dr. Edmund Halley constructed one in 1717. A depth of ten fathoms was attained with this model, and the conquest of the deep had progressed one more step.



Diving without equipment allows to reach a depth of 30 meters for a few minutes. Forty meters can be reached with ordinary diving suit where air is forced under pressure into the helmet by means of a pump. A modern diving suit equipped with compressed air bottles makes it possible to attain a depth of 90 meters for two or three hours. If the ratio of oxygen and nitrogen is changed somewhat a diver may go to a depth of 140 meters for a few minutes. Only a steel armor which resists the pressure of the water enables the diver to go still deeper and to work there for a few hours

THE FIRST SUBMARINE 1777 A. D.

A SMALL vessel passed Governor's Island in utter silence. Its commander was nervous, for dawn was almost breaking and his ship was not proceeding as fast as he had hoped.

The delay was mainly due to that unheard-of contraption they were towing behind them; a strange little vessel. A noiseless signal at last informed the man in the odd craft that the commander in the vessel ahead was giving orders to cast off the rope and that he was now to proceed alone.

Sergeant Ezra Lee, sitting alone in the tiny craft, pressed a lever with his foot. A valve opened and admitted water into the vessel. It sank until it was almost awash. Removing his foot from the lever he began to crank a handle. A propeller turned, and silently and almost invisibly the craft moved sluggishly on—on toward where ships were anchored in the Bay, warships of the British. They had New York Harbor bottled up, hoping to win the rebellious colonies back to the crown.

The strange craft, designed by one of the sturdy men who were fighting for independence, reached the British 64-gun ship, *H.M.S. Eagle,* undetected. Ezra Lee could have touched her stern when he closed the lid of his primitive conning tower He pressed the valve lever again, his craft sunk. Lee hastily began to manipulate the various devices.

There was a forward propeller and a vertical propeller. Two brass pumps forced the water out of the hull if he wanted to ascend.

A weapon of offense awaited Lee's use, too—a mine with a powder charge weighing 150 pounds. It was attached to the outside of his boat, and connected to a large wood screw that could be operated from the inside. The plan was to drill this screw into the hull of the enemy vessel, detach it from the wooden submarine boat and leave screw and mine with the enemy while the submarine hurried away, after setting the detonation clockwork.

But luck was not riding with Ezra Lee on this maiden attempt to blow up the enemy from an underseas craft. The tide swept him away because he could not work propeller and wood screw simultaneously. Hardily he tried to drill at a point where broad iron strapping supported the hinge for the *Eagle's* rudder, but had to give that up. Possibly he was forced to that when the air in his craft became too stale. It was supposed to last for only thirty minutes.

Suddenly detected by the English, he had to flee in a series of dives. Under way he let the mine go—afterwards he explained that it slackened his speed too much—and it exploded harmlessly. Luckily for him he escaped, but the first submarine that actually attacked an enemy was destroyed after one or two more unsuccessful attacks. It found its end in the Hudson River.

Many years later, in 1926, an old man who had practiced medicine in Georgia

died. To his neighbors he had been Doc Bush of Old Bush. When his will was opened it was learned that he had in fact been David Bushnell, born in 1742 in Saybrook, Connecticut; graduated from Yale in 1775; inventor of the submarine boat *Turtle*.

After various disappointments he had left for France to offer his invention to the French government. Disappointed again, he had returned to his native America, changing his name, his residence, and profession, trying to forget that he had ever had such a dream.

But in France he had met another American, the artist and engineer, Robert Fulton. And Fulton in 1800 built *Nautilus*. It was tried on the river Seine near Rouen, and the mistake is often made of acclaiming it as the first submarine that could actually dive —and come back up.

THE UNDERSEA TANK 1965 A. D.

"GENTLEMEN," said Professor Wilbur at the banquet given in his honor by the National Oceanographic Society, "gentlemen, I am humbly grateful for, and flattered by the praise you shower on me. Still I cannot help but feel that you are exaggerating. It is true, I did invent the underwater tank, have built several models, the latest of which might be termed successful. And I did make the exploration trip to a depth of several hundred meters off the Florida coast. But I did no more than combine a number of known facts.

"You are all familiar with the various diving inventions of the last five centuries, most of them discarded after tests. Whatever device was used it was always found that the human body could not stand up. Divers in diving belts got what they called "the bends," known to physicians as 'caisson disease.' It was caused by nitrogen dissolving in the blood under pressure and returning to the gaseous state when the pressure was relieved too suddenly. Therefore, much time was lost in descent and ascent when the depth exceeds ten meters.

"The same difficulties were found in diving with diving suits, no matter whether the air pressure was forced upon the diver by a pump or by compressed air from portable steel containers. Diving without pressure proved a hundred per cent fatal, on account of 'Stigler's sickness.'

"It was obvious, then, that there was only one way of reaching bottom in deep water: to don an armor that would bear the strain of water pressure without exerting any of it on the body of the diver. Following this trend of thought, Schuetz and others, in Nineteen-twenty built steel diving armors that permitted work at a depth of two hundred meters. A few years later Barton and Beebe designed the so-called bathysphere, a heavy spherical steel shell that was lowered from a ship. The depth it attained was more than five hundred meters. The first photographs of deep sea life were made from this sphere.

"What I did was to combine the mobility of steel armor with the toughness of a bathysphere. To be frank, I thought at first of an improved submarine. But although I am not an expert designing engineer I soon found out that a submarine strong enough to dive, say four hundred meters, and having a sufficiently large safety factor would be too heavy to float. Such a device would weigh almost two tons even when completely submerged.

"It was in reading of a new army tank of this weight that I saw the solution. Why not, I thought, put my heavy submarine on wide caterpillar tracks, abandoning propeller for a wheel drive?

"I tried it, and I nearly lost my life during the first test when I chanced on a soft and muddy spot at the moment one of the wheel chains broke. So the next model was a definite improvement, but I was not satisfied. Neither am I satisfied with the present model although it makes possible a survey of the sea bottom to a depth of two hundred and fifty meters.

"The next model will have to be large enough to be equipped with a water lock so that the diver may leave the tank in a special steel armor.

Eventually my invention will make surveys to a depth of three or four hundred meters possible. Thus can be explored every large lake on Earth, the Caspian Sea, the Mediterranean, the Black Sea, the Baltic and the North Sea, and every bay, sound and gulf on the globe. Only the real deeps will then still be inaccessible, as they will probably remain for all time to come."

SUBMARINE WARFARE 1975 A. D.

THE commander of the Twenty-third Underwater Tank Battalion was much displeased with the position in which he found himself, and said so in plain military language.

For seventy-two hours they had waited, buried in the mud of the sea bottom at a depth of 270 meters, not far from one of the undersea canyons which had caused so much scientific excitement when they had been discovered a few decades before. It was the duty of this battalion to guard the entrance to the harbor. The commander knew that it was of paramount importance to hold this position, since there was hardly any other possibility for the enemy to break through the defenses. The front lines were rigid, the air defense impenetrable, the surface of the sea covered with chains of mines, extending for many square miles and reaching down to a depth of 120 meters, as deep as enemy submarines could go before their hulls cracked.

If, unknown, the enemy had developed submarines that could attain greater depths, or if they should decide to drop underwater tanks from ships farther out, much damage might be done before they could be spotted and destroyed. Therefore several battalions of underwater tanks had been secretly dispatched to guard the harbor of the Nation's capital. The 23rd battalion guarded the left "shore" of the submerged canyon, the 19th battalion the right "shore." A few more were scattered to right and left.

The commander of the Twenty-third knew how such an attack worked. He had once been in command of a squadron that had penetrated all enemy defenses and entered an enemy harbor. More than forty ships had been destroyed and much damage done to the fortifications before the enemy recovered sufficiently to fight back. Still, seven of the two dozen tanks had escaped and five had managed to return to the comparative safety of their own under-water lines.

Such warfare was at least interesting. But to wait buried in ooze, without a whiff of fresh surface air for days was without interest whatsoever; marking time inside of one of those foul-smelling steel monsters that were more than a hundred feet long and thirty feet wide and too heavy to move except where completely submerged.

Suddenly one of the many instruments burred alarm signals. At last the enemy was attacking! Underwater tanks were speedily informed by wireless aquaphone that an enemy carrier had been caught dropping tanks overboard. At least a dozen tanks had disappeared in the water before a bombing squadron had sent the carrier after them.

Listening tensely, the commander heard crisp details of a massed attack that was being launched. A good portion of the enemy's battle fleet was just outside the barrage of mines, submarine flotillas were attempting to break through, heavy fighting was blasting through the air. Hardly half an hour had passed before the instruments of the Twenty-third tanks recorded the approach of a number of enemy tanks.

The Twenty-third battalion waited, torpedo tubes ready. About twenty of the enemy tanks were forging on, unaware of the surprise in store for them. But they soon were made aware with calamitous swiftness. Eleven of them subsided at the opening barrage, their hulls punctured, their crews dead before they realized they were caught in a trap. The others defended themselves with their backs literally to a sea wall.

But the defenders were superior in numbers. A few more tanks of the enemy were overpowered and destroyed, the remaining four or five were forced toward the rim of the

under-water canyon. Suddenly they disappeared, sliding down the steep incline of the wall of the canyon.

The defending commander called his own tanks back. These enemies were no longer to be feared. The additional two miles of water pressure they would meet when reaching the bottom of the incline would flatten them out. Nothing man-made could stand a greater depth than a mile.

THE BOTTOM OF THE SEA 2155 A. D.

THE pilot looked away from the creeping needle of the depth indicator for a moment and spoke into the microphone that carried his voice to the main cabin of the submarine.

"Gentlemen, please accept my congratulations. We just passed the sixteen-hundred-meter level and still everything is well. The deep-sea diving record is ours."

Professor Tillotson acknowledged the congratulations with a few friendly words, disconnected, and turned to the others in the cabin.

"It is hard to understand why these engineers never grasp a new principle unless they see it work," he observed. "I took the trouble to prove to this man—a most able man, too—that my energy screen cannot possibly collapse under any amount of outwise pressure because it automatically draws twenty-five percent more power from the automatic power releases than it needs to equalize the pressure. Unless the necessary output supercedes the capacity of the generators, or unless the fuel is exhausted, the screen has to hold."

One of the three reporters permitted to accompany the try-out trip asked a question. About some fish that were swimming near the window.

"Our submarine is one hundred meters long," answered Professor Tillotson "It is a normal sub of the type used for exploration in shallow water. It could not stand a depth of more than a hundred meters. But at ten meters the automatic screen begins to work. It is spherical since its energy radiates from one point. The diameter of the screen is one hundred and twenty meters, extending five meters in front of the prow and fifteen meters behind the screws and rudders. These surface fish you see were caught inside the screen and we brought them down with us. They are under the pressure prevailing at a depth of ten meters. So is the hull of our sub and so will we be when we leave it in normal diving suits. Probably these fish wonder why the night came so fast this time."

The vessel was sinking steadily. The engines were no longer working. Only the atomic generators that fed the screen were active. The pilot's eyes gleamed as he saw that the depth indicator had reached 2300 meters. The submarine mountain chain in the middle of the Atlantic Ocean ought to be near now!

Then a slight jarring of the vessel announced that the screen had touched ground. The vessel seemed to float above the bottom of the ocean, its center sixty meters above the point where the screen touched ground. Nothing could pass through this screen, nothing but ethereal vibrations such as light, magnetism and gravity.

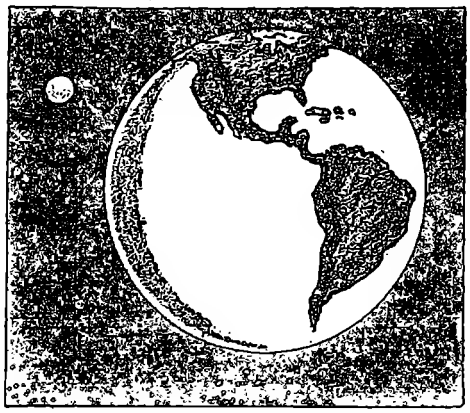
The men emerged from the water lock of the submarine, equipped with light surface diving suits. There was not much they could do, however, for they could not penetrate the screen. Surrounding them on all sides, it seemed to be a gigantic ball of glass, so thin, so transparent as to be invisible in water. And this invisible shield seeming to be vibrating. With eyes that realized they were gazing on a scene never before spread out before human eyes, the men in the diving suits looked in awe at the fantastic landscape beyond the screen, illuminated by the powerful searchlights of the vessel. Then reluctantly they returned to the lock.

The real experiment was to begin now. Nothing could penetrate the screen. That was fully proved. And something must be further done before it could be of practical use. But the solution of this dilemma was simple. A second set of atomic generators had been installed in the ship. These now built up another screen, five hundred

meters in diameter. A tremendous amount of life of the deep was caught in the space between these two screens as the other screen cut deep into the bottom of the sea. Then the inner screen was released.

The ship still floated, immovable, sixty meters above the ground at the bottom of the ocean. It could not move, anchored as it was even more rigidly now than before. But that mattered little. Everything inside the larger screen was accessible now to the divers. Again man had triumphed over the forces of Nature—and men, diving men at the bottom of the sea—were exultant.

Deep sea life had been trapped. The bottom of the sea to an extent of more than four hundred meters was man's. Everything was open for study. The real exploration of the deep had begun.



IN THE NEXT ISSUE

THE NATURE OF THINGS

A Special Article

BY SIR WILLIAM BRAGG

Nobel Prize Winner—President of the Royal Society —and Director of the Royal Institution of Great Britain and of the Davy-Faraday Research Laboratory

JEAN ROGERS IN THRILLER GIVES STAR PERFORMANCE!

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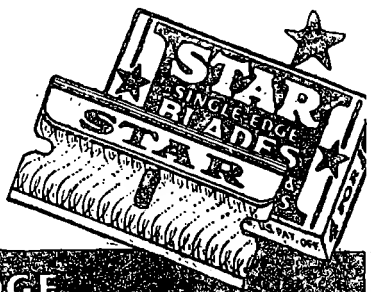

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Out of that box flowed enough power to set the heavy motor spinning despite the application of the brakes.

The Man Who Looked Like Steinmetz

By ROBERT MOORE WILLIAMS

Author of "Beyond That Curtain," "Zero as a Limit," etc.

HE looked from Schultz to me, and because I was behind the desk he knew I was the man he wanted. He limped past my worried secretary and carefully set the box on the desk.

"Mr. Collins?" he asked. "I am Joseph Liederman. I want to see you."

I nodded vaguely. I was already jumpy enough — as was everybody working for the company—without looking up and seeing standing in my door a man who looked enough like Steinmetz to be his twin brother. If I hadn't known that Steinmetz was dead I would have thought the wizard from Schenectady was paying us a surprise visit.

Steinmetz was a little man with black eyebrows and a bulging forehead. Joseph Liederman was a little man with black eyebrows and a bulging forehead. At least he said his name was Joseph Liederman.

You know how a new and unexpected situation will leave you groping in the dark. You don't know exactly what to say or do. Especially if you are already upset.

It wasn't that I am not accustomed to meeting inventors. I meet enough of them to know how to talk to them. It was the fact that this fellow looked like Steinmetz. That, and the trouble we had been having.

I sat there and stared at him for sev-

eral seconds. My secretary closed the door as she went out and I recovered a little of my shattered poise.

"Er—yes, I am Collins. Sit down. What can I do for you, Mr. Liederman?"

"I understand," he began, "that your company has been caused of trouble a great amount due to the fact that fluctuating your power output has been. I am sorry. Of course, I had noticed that my own lights blinked when the primary coil was started turning, but I did not realize that there was over your lines a kick-back which interfered for a few seconds with the generation of your power—"

There was the taint of a foreign accent in his voice. He didn't always get the words in their proper positions.

Schultz took a long, deep breath and then seemed to quit breathing. He is head of our experimental and testing laboratories. He has a long horse face, frowsy red hair, and he looks like he just got off the train from Podunk and is seeing the city for the first time. But he has a degree from one of the biggest engineering schools in the country and he knows more about currents than any man we employ. He inhaled deeply and the air whistled through his nostrils.

I batted my eyes a couple of times. What kind of a nut was Liederman?

"I—er—admit we have been a little worried about minor variations in our power output. No trouble, you understand. Just minor fluctuations," I answered. I tried to sound casual and convincing, but it was a little more than I could manage at the moment.

MINOR variations, hell! Schultz hadn't had enough sleep in months because of those variations. Neither had any of our engineers or linesmen, nor even President Watson, nor the Board of Directors.

Persistently, over a period of months, the power we were supplying had been subject to erratic variations. At almost any time during the day or the night, the power would drop suddenly, motors would slow and the lights of the city would dim. Several seconds would elapse, and then the lights would gradually return to their normal brilliance. Every user of light or power would call us up and want to know what in the devil was the matter with us, didn't we know how to operate a utility company, or didn't we give a damn about service, or what?

Our engineers had checked every generator we owned and reported the generators in perfect condition. Our linesmen had gone over every foot of high-lines and removed every leak. and the lights still blinked!

We knew that nobody was stealing our power and that it wasn't leaking away from us. Our engineers were going nuts trying to figure out how laws they regarded as immutable could go haywire. For it boiled down to that.

The high pressure steam hummed through the turbines, the generators cooed to themselves, and suddenly they didn't produce their normal output.

We had been going over plans for further checking when Liederman came in.

"As soon as I understood what was happening, a filter I installed and your troubles stopped. That was three days ago."

Schultz exhaled his breath in a panting sigh. I just sat there and stared at Liederman. Of course, one of our employees might have told him that we were having trouble. Possibly he was trying to take advantage of our difficulties to sell us something.

But how did he know that the variations had ceased three days ago? I blinked at him. Inside of me something was turning cold. You never know when another Einstein is going to pop out of obscurity and upset all scientific thinking. You never know how much scientific theory is right and how much is wrong, because the scientists—even our engineers who take our money for what they are supposed to know—are in reality only doing a lot of high-powered guesswork when you get down to fundamentals.

"Did — did you cause those variations?" Schultz interposed softly.

Liederman inclined his head in a grave courteous nod!

"I am sorry, yes. The primary coil of my large generator was motor-

driven and the motor was drawing its current from your lines. When the primary started turning, there was a momentary kick-back over your lines and this kick-back neutralized the current your generators were producing. It was unfortunate and I had not intended to cause you inconvenience."

There was silence in the room when he finished speaking. I could dimly hear my secretary pecking away at her typewriter in the next room. The shouts of the newsboys, the tooting of auto horns, the clamor of the bell of a street car, came up from the streets below us. The familiar sounds of the city But here there was labored silence.

Remember my position and background. My title, assistant to the president, sounds very nice, but about all it means in my case is that I am the guy who sees the men who have invented gadgets they think we will buy at fancy prices. The things they try to sell us!

My job is to tell the inventors in the nicest possible way that we are very sorry but we cannot use the idea. You know—pat 'em on the back while you kick 'em in the pants. And if a worthwhile idea comes along, I test it and report to the president. Every big company has a man who sees the inventors. Ninety-nine percent of the gadgets brought to us are worthless. But that one percent—

Brother, you better watch out for that one percent, for you never know when some timid little man is going to come tiptoeing into your office and lay on your desk a gadget that is worth millions.

I realized then that I was staring at the box Liederman had put on my desk.

"I don't understand," Schultz seemed to whisper. "What does your generator produce?"

Liederman's face wrinkled into a half frown. His eyes—black, they were, as black as midnight—seemed to turn inward, as if he were trying to look inside his own skull and find an answer to a perplexing problem.

"That I do not know," he answered finally. "My generator produces a force that is much cheaper and more efficient than electricity. But I do not know the exact nature of that force. . . "

I stuck my neck out.

"You are trying to sell us something and don't know what it is?" I rasped.

He looked at me.

"You sell electricity, don't you? Do you know what it is?"

My face was probably a beautiful shade of red. He had me. I don't know what electricity is, in spite of the fact that the company I work for generates and sells it. Nobody from the president down knows what we sell. The engineers, with charts and graphs and slide rules, know a few things this force will do, and unless you are familiar with these engineers, they will give you the impression they know what they are talking about.

If you pin them down, they will go off into theory and finally start giving you answers in pure mathematics, but if you boil down all their theories and formulae, you will find they add up to exactly nothing. Smart men, these engineers; but the things they don't know would fill the Doomsday Book.

"But we know what electricity will do," I came back at him.

"And I know what this new force will do," he answered patiently. "Motors it will turn, bulbs it will light, it will flow over wires. I think, perhaps, it is of electricity a new form."

Schultz looked at me. He was begging me to shut up. He turned to Liederman.

"Could you give us a demonstration of this generator?" he asked.

"Certainly. That was my purpose in calling on you." He pointed to the box sitting on my desk.

"There is the household generator of the future. The equipment housed in that box costs only a few dollars. At the cost of a few cents a month, it will develop enough power to operate a normal household."

Schultz didn't bat an eye lash. Nor did I. But I knew, at that moment, that Liederman had better be a liar, had better be another cracked inventor. Because if he was telling the truth—well, you figure it out. We have about thirty-seven million dollars invested in generating equipment and transmission lines. It would become junk almost overnight. What a splash that gadget would

make in our economic civilization. You think about it. I don't dare.

BUT I knew, in that moment, that a mighty big one percent had come tiptoeing into my office, so big a one percent that I didn't know what to do about it.

"Ben Collins," said Schultz out of the corner of his mouth. "Let's take Mr. Liederman and his box down to my lab and do some checking."

That was perfectly all right with me.

Schultz started to pick up the box but Liederman brushed his hands aside. "No, no, sir. I will carry that." He lifted it like it was full of TNT. In a way, I guess it was.

As we started through the private exit my secretary came from the reception room. She closed the door before she spoke.

"Mr . Mr. Collins, there are two men out here, asking for Mr. Liederman."

Liederman spun to face her.

"Tell them I am not here," he hissed. "Tell them you never heard of me. You understand?" His voice was a sibilant whisper.

Liederman's words scared the girl. She drew back away from him.

He turned to me.

"I am sorry, Mr. Collins. Two men have been annoying me for about six weeks. How they ever learned about me, I cannot understand. They have even tried to break into my workshop. The police I do not care to appeal to. The men want this." He hugged the box. "And they must not have it!"

Schultz grunted.

"I'll say they must not have it."

I didn't know whether they were bill collectors or rivals from another company trying to get hold of Liederman before we got to him, but I knew what to do about this.

"Tell the men we know of no Mr. Liederman, that we never heard of him."

"But—" she persisted.

"If they as much as smile at you, call the cops."

"Yes sir. But—"

Her insistence annoyed me.

"But what?" I snapped.

"But they have guns," she whispered. "I know one of them has a pistol. I saw the bulge in his pocket and I thought you would want to know."

It was so preposterous that I laughed at her.

"Nonsense! You been reading detective stories again. Go on out there and tell them we never heard of anybody by the name of Liederman."

Schultz already had the door open. Even if there had been forty men in the reception room, each with two guns, he wouldn't have given a damn. He wanted to see that generator work. Anyhow, the girl was probably imagining things.

Schultz has been with us about six years. He is about thirty-three, only a couple of years younger than I am. I have frequently worked with him in testing gadgets offered to us, but this was the first time I had ever seen him excited. Every red hair on his head was trying to stand on end.

He knows more of the theory and practice of electrical engineering than I do. My job is to know dollar values.

Usually he is the height of dignified aloofness when considering some new idea for us. He doesn't have to look twice to know whether it won't work. Or if it will.

He led us down to his lab. He kicked out his assistant and locked the door.

Liederman set his box on the table and Schultz took charge.

The box was about eighteen inches long, eight inches wide, and twelve high. The top was hinged. Liederman folded the top back and Schultz and I stuck our noses in to see what we could see. I was disappointed, but Schultz was panting like a kid in toyland.

TUCKED down in one corner of the box were four small dry cells. They were wired in series to a small motor that was coupled directly to a compact coil of wire so arranged that when the motor turned the coil turned with it. Around that coil, but not touching it, was an unorthodox secondary coil wound with heavy copper ribbon. I guess it was copper. It looked like it.

The windings of the secondary crossed and criss-crossed at crazy

angles so that it almost made you cock-eyed to try to follow the windings. Set on each side of the secondary was—remember the old peanut tubes. They took a volt and a half on the filament—the voltage of an ordinary dry cell—and whatever you happened to have handy to use on the plate.

Liederman had two of them on each side of his secondary coil. Obviously they were used to produce some kind of an oscillation. Or were they? I tried to follow the wiring diagram but there were too many condensers and coils in that box. The ends of the secondary winding came up to an ordinary outlet plug in the side of the box.

"If you have meters—" said Liederman vaguely.

What did he think we were running? Schultz snapped questions at him.

"AC or DC? Voltage limits?"

"This force cannot be called either alternating or direct," he answered. "And, within reasonable limits, I can produce any voltage you desire."

That stunned Schultz for a few seconds, made him a little doubtful. He laid a heavy meter on the table, ran a plug to the outlet on the side of the box.

"Okay, Mr. Liederman. Produce me current at one hundred and ten volts, please."

Liederman nodded. He thrust deft fingers into the box and shifted a series of small switches that apparently controlled input. He moved a final switch and the peanut tubes glowed faintly. The primary coil started turning as the tiny motor picked up speed.

Liederman pointed to his motor.

"In my larger installation at my workshop," he said, "the motor was naturally larger and was wired from city current, your power fluctuations resulting—"

Schultz didn't hear him. He was staring at the meter on the table and he looked like a man seeing something he cannot believe. If he had known as a positive fact that the next second the earth would open and swallow him, I do not believe he would have been any more excited. His eyes were fixed and glassy. When he spoke, his voice was hushed with awe.

"Ben," he begged. "Will you look, please, and tell me if you see what I do—"

I looked. That damned meter was registering a current flow at one hundred and ten volts!

"Certainly," said Liederman softly. "You requested that voltage, did you not?"

Frankly I was stunned. Ever since Liederman had walked into my office, looking enough like Steinmetz to be his twin brother, I had had the feeling that I was in the presence of one of the greatest men—if not the greatest—that this age has produced. But you can't get an idea like that through your head in minutes, or I can't. I've seen too many fakes. When that meter registered one hundred and ten volts . Well, my eyes told me I saw it, but I hadn't realized what it meant in terms of dollars and cents, in human values, in economic, social, and political changes.

Yes, I mean political changes. Governments could fall because of this man. You don't need bands playing and speeches in the name of patriotism and roaring cannon to upset governments. One little invention would do it. Whitney's cotton gin . .

What this invention really meant began to get to me when Schultz disconnected the output from the meter and connected it with a five horse-power motor with a brake arrangement that we use for testing.

OUT of that box, eighteen inches long and twelve inches high and eight wide, flowed enough current to set that heavy motor spinning. It was our motor, so there was no chance of trickery. Schultz slapped on the brakes and the leather smoked and the motor bucked and hummed — and turned. There was power in that box, wonder-working power.

You get what I was thinking. You take the internal combustion engine out of an automibile. You redesign the lines of the car so that you have direct drive on the axles. You insert one of Liederman's generators somewhere in the car, maybe a box bigger than this one, maybe not. Then you've got an electric automobile! You've got some-

thing just as fast as a car driven by an internal combustion engine, under better control, and operating for a fraction of a cent a mile!

Sounds wonderful, doesn't it? Everybody would have a car and would go places and see things. Beggars would ride. It sounds wonderful. Too damned wonderful

Did you ever ride down through Oklahoma and see, for miles and miles, the tall derricks marching by in orderly rows? Did you ever see the East Texas fields?

Maybe you haven't seen the wells of Oklahoma and Texas, maybe you don't know how vast and far-reaching is this mighty industry, but down on the corner you've seen a service station. You seem to see them on almost every corner. There are uncounted millions of dollars in wells and pipelines and refineries and service stations, and millions of men work to run the industry.

Get it? Liederman's generator would make the electric automobile so cheap that the internal combustion engine would be useless. That service station down on the corner would close up, and the two or three or four men who run it would have to look elsewhere for a job. No gas to sell today. Nobody wants to buy it.

Down in Oklahoma the derricks would rust in the sun and the rain. Good place for a desert and nobody would need it for much else.

The collapse of that one industry, oil, with millions of men thrown out of work and millions in capital gone, would throw our economic civilization into one grand mess.

That's what I was thinking while Schultz was leaning on the brake of our motor and Liederman was wrinkling his nose at the smell of burning leather.

I was also thinking about that thirty-seven million dollars we have invested in generating equipment and transmission lines. A lot of old people have invested their life's savings in our stocks, expecting a return in dividends that will keep them in their old age. Our stocks and bonds are in trust funds supporting widows and in other funds paying for Junior's college education.

Get it? Junk. No more dividends for the widows, no more college for Junior.

This is one city. There are hundreds of cities in this country, and the manufacture of electric power is one of our biggest industries. Junk. Those generators and high lines. Worthless, those stocks and bonds.

WHEN the power first started fluctuating, our directors started holding secret meetings. Those directors are hard-headed business men. They had been afraid that natural law was going screwy and we wouldn't be able to generate current. They knew what that would mean, not only to us but to the whole county. Hell, instead of not being able to generate current, it would be possible to generate current too cheaply. Either way, it was catastrophe.

It sounds crazy, and it would be crazy, if we had a sound economic civilization, but we don't have such a civilization—witness the depression years. We have a patchwork economic foundation in which the security of the whole is dependent upon the security and well-being of every part.

Joseph Liederman, the man who looked like Steinmetz, was tossing a lighted match into a pile of gunpowder as big as the earth and the explosion that was sure to come would blow old Mother Earth right out of her orbit. Or blow from her surface the biped who thinks he runs it.

I don't think Liederman knew the nature of the dynamite with which he was playing. He was an inventor, a genius in his line, and he knew that his invention was valuable, but he didn't know what it would mean to humanity.

He stood there in our laboratory and wrinkled his nose at the foul odor of burning leather. The motor grunted as Schultz put pressure on the brake but the motor kept on turning. There was power in that box, power to loose or to bind.

The hum of the motor built up to a high-pitched whine as Schultz kicked off the brake. He stood there panting, looking from the box to Liederman.

"Where—where is all that power coming from?" he asked.

"Where does electricity come from?" Liederman answered. "You shake your head. You do not know. Nor do I for certain know where the power of my generator comes from."

"But for every watt we get from a generator, we have to put a little more in," Schultz protested. "You put in the power of four dry cells and take out enough current to run this motor. You violate every known law of energy transfer."

"Yes," Liederman answered, tugging at his beard, "yes, I believe this device violates every known natural law. But apparently it operates in accord with some law that we don't know— I suspect it is drawing energy from subspace. You are familiar with the action of a catalyst, a substance that produces a chemical reaction without itself being changed? This generator is similar to a catalyst; it draws power from subspace. It pierces through to some vast reservoir of power. That is all, I think."

Schultz wet his lips. He started to speak but changed his mind. He wandered carelessly over to that box. Liederman limped after him. He watched Schultz from those black eyes of his.

But Schultz merely stared at the contents of the box. He wiped sweat from his forehead.

"What—what is the principle of the operation of that primary coil?" he asked.

Liederman smiled the foxiest smile I ever saw on the face of any man.

"I am not as yet ready to explain that principle," he answered.

Schultz took a long breath.

"I don't blame you. But why do you use radio tubes? At least they look like radio tubes—"

"They are radio tubes. But I will not tell you why—"

Well, my turn had come along. Schultz had said all he could say and it was my turn to speak my little piece, to toss off nonchalantly a few sentences that would solve our problem.

Talk, fool, talk. Act like you don't know how much depends on what you say. Knock Liederman's generator. Say it isn't practical. Beat him down. Make him think it's no good. Try and make him think that!

SEE if you can buy it for a song. It will make your company enormously wealthy, maybe. If it does you will get a slice of that wealth. Winters in the south and summers in the north. . . A yacht—an estate in the country. They are all in that box, if you work it right. If you work it wrong, there is a world of misery in that box.

Talk, fool, talk. Act like you don't know you are making the most important speech in the history of the world.

I wet my lips.

"Mr. Liederman. Ah, wait here, will you? I would like Mr. Watson, our president, to see your generator."

I guess I'm a little man. I guess I'll always be a little man. I stammered through those words like a ten-year old. There was withering scorn on the horse face of Harry Schultz.

But, hell, what was I to do? I don't make history. I just watch it go by. I had to pass Liederman on to more capable hands.

Schultz took the key from his pocket and unlocked the door.

"Damn you, Ben Collins," he whispered, "you get Watson down here in a hell of a hurry. I'll hold this guy if I have to slug him."

He slammed the door behind me and I started down the corridor at a dead run. I almost ran over my secretary coming toward the lab. Two men were with her. She was marching along with her chin up in the air and didn't seem to see me. The men didn't glance at me either. There was no time to waste on apologies. I had to get Watson.

I interrupted him in an important conference, but I was so incoherent and excited that he saw something was wrong. He came along with me without a word of protest. He can make decisions. That is why he is president.

As we left his suite, there came the sound of a car backfiring, thin and muffled in the distance, Watson pricked up his ears. "Listen."

But the sound was not repeated.

The lab is two floors down from his office and at the end of a long corridor. We used the stairs because they are quicker. We went along the corridor.

I saw the door was open but I thought Schultz had merely forgotten

to close it. My secretary had been headed toward the lab. It was at this point that I remembered the two men who had been with her.

The lab door was open. There were two men lying on the floor. Beyond them a woman was trying to get to her feet. With one quick step Watson was beside the woman.

I knelt beside one of the men. There was a hole in his chest. Blood was gurgling from the breast of Harry Schultz. A bullet had touched a lung. But he was alive and conscious. He scowled at me and gasped.

"To hell — with me — Take care of Liederman—"

He collapsed.

But the bullet that had struck Liederman had touched more than a lung. It had hit his heart.

Things happened awful fast in that lab. Watson knows how to give orders and have them obeyed. In what seemed less than seconds the room was full of cops and an ambulance was moaning outside. As they lifted Schultz on the stretcher, he recovered enough to swear at me. "Damn you, Ben— Get that— box—"

I looked at the lab table. Liederman's generator was gone.

THE two men? The cops, with one homicide and an attempted homicide on their hands, raised heaven and earth looking for them. They traced them by the box they carried. They found the taxi-driver who had picked them up outside our door. He had carried them seven blocks and had dropped them. The cops located the second cab they took. He had carried them less than four blocks. There the trail ended. They must have had a car waiting.

Watson prodded the police department and they checked every hotel and rooming house. No result. Then they went back over Liederman's trail. I guess his name was Liederman. When they couldn't locate his residence, or find the workshop he had mentioned, Watson lost his temper. He hired every private dick in town. They're still poking and prying into attics and cellars.

Somewhere in this city there is a workshop. I hope our detectives never find it.

Because there was a possibility that the two men might have represented some foreign nation, we told the State Department about them. They say there isn't a whisper anywhere in the world of a new source of power. They think we're probably lying about the whole thing, but they watch anyhow, for we might be telling the truth.

The two men? I remember how carefully Liederman handled that box, as if it had TNT in it.

And Schultz—poor devil. He recovered from the slug. He mopes around his laboratory, swearing to himself. He buys bushels of peanut tubes and winds some of the craziest coils you ever saw, and when he doesn't get any results, he swears weakly and tries again. I hope he never gets any results, but he's an engineer and he saw that generator. And he will continue trying to duplicate it until he dies.

And me? Every time the light flickers from any cause, I almost have heart failure . . .

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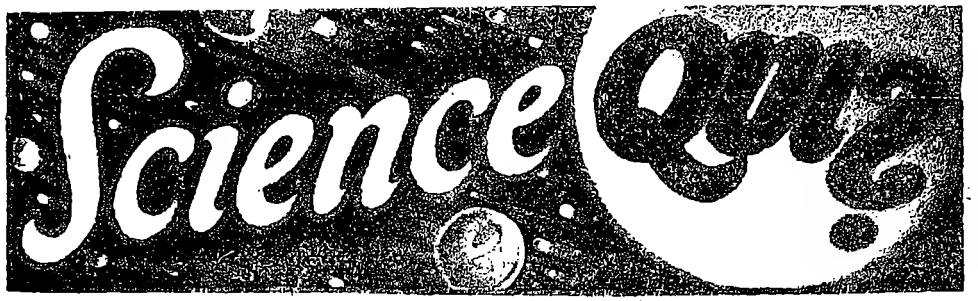


A BRAND-NEW, FASCINATING FEATURE

HERE'S a chance for all you embryo Einsteins and Millikans to generate 100 ergs of cerebral energy! With this issue, THRILLING WONDER STORIES introduces its latest, brightest feature—SCIENCE QUIZ.

Our own Doctor Quiz informs us that you don't have to be a Nobel Prize winner or have the I.Q. of a genius to select the proper solutions. Of course, if you can invent some automatic gadget that will indicate the correct answers to our mental merry-go-round, you won't have much difficulty in collecting a perfect score. But if you can't devise one of those jiggers, you had better consult page 93 when you're done. And there will be a new batch in the next issue!—Editor.

POSITIVE OR NEGATIVE?

Some of the following statements are true, the rest are false. Put a plus or minus next to each statement, according to what you think. (Par.—16 correct.)

1. Compasses don't point to the geographic North Pole, but to the North Magnetic Pole, which is a stationary point on Earth's surface.
2. Geological destructive forces are always at work. As a matter of fact, the surface of the United States is being worn down at the rate of one foot in about 800 years.
3. The Solar System consists of more than 700 heavenly bodies.
4. Sound can't travel at all in a vacuum, yet its speed is four times faster in water than it is in air.
5. While the cause and cure of cancer is still a mystery to medical science, it has been suspected for a long time that there is a definite relationship between diet and cancer.
6. The properties of matter may depend on the freedom of the molecules. Thus in a solid, molecules have very little freedom of motion, and in liquid they have much more freedom, and in a gas they have the maximum of freedom.
7. With all the changes that may occur to a chemical element, the one thing we can be sure of is that its atomic weight never changes.
8. If you are a father of children, and are color-blind, you can be sure that your sons or daughters will not be color-blind. However, while your son's children won't be color-blind either, the children of your daughter may be color-blind.
9. Mass cannot be destroyed.
10. When in doubt whether an unborn child is going to be a male or female, you needn't consult a fortune-teller for the answer. Science eliminates the guesswork by application of Mendel's laws of inheritance.
11. While the number of stars visible to the naked eye seems countless, you can't see more than 2,000 stars at any time on any clear night.
12. The psychoanalytic or Freudian school of psychology attempts to account for the forgetting of names and other phenomena involving repression by means of the unconscious.
13. The sun contains more than 99% of the mass of the entire Solar System.
14. It is very important to know the albedo of a star or planet, for it gives you the ratio of the mass of the body to the amount of energy radiated by it.
15. There is at least one place on Earth where rain or snow has never fallen.
16. Rhine, working with what he calls "extra sensory perception," says caffein increases accuracy and sodium amythal decreases it.
17. Water can be frozen and boiled at the same temperature.
18. You needn't worry whether to call an object that falls from the sky a meteor, meteorite, or meteoroid, for all these names are synonymous.
19. The mass of a proton is about 1847 times as great as the mass of an electron.
20. While reading this question your eye jumps over the lines, making about three or four pauses a line, and spends more time on the first half of the line than on the second half.

TAKE A LETTER

Take your algebra down from the shelf and place a letter—a-b-c or d—next to each of the following statements, according to what you think is true. (Par.—7 correct.)

1. If two airplanes leave New York at the same time, flying at the same rate of speed, one winging its way due east, and the other due west, the planes will meet over: (a) Russia, (b) the Gobi Desert, (c) Indian Ocean, (d) Himalayan Mountains.
2. Although we probably shall never know the exact number of stars in the Universe their estimated number is about: (a) 100,000 million, (b) 100 million, (c) 1 million.
3. The number of red blood corpuscles in each cubic centimeter of blood is about: (a) 5, (b) 5 hundred, (c) 5 thousand, (d) 5 million.
4. If you saw a cretin, you'd suspect one of the following glands were not working properly: (a) thymus, (b) pineal, (c) pituitary, (d) thyroid.
5. Which one of the following factors does not play any part in increasing the speed of a glacier? (a) steepness of the slope, (b) salt content, (c) thickness of the ice, (d) high temperature.
6. The entire amount of rain and snow falling on Earth per second averages about: (a) 16 million tons, (b) 32 thousand tons, (c) 48 hundred pounds.
7. The entire amount of matter in the Universe in relation to the immensity of space is in the ratio of: (a) a proton to an electron, (b) Empire State building to a peanut, (c) grain of sand to the entire bulk of the earth.
8. There are a number of methods for estimating geologic time, such as the age of the Earth. Which one of the following is not so used: (a) salinity of the ocean, (b) volcanic emissions, (c) sedimentary rock (d) uranium-lead ratio.
9. In describing the parts of the human cell, you shouldn't mention one of the following: (a) nucleus, (b) cytoplasm, (c) mesophyll, (d) chromatin.
10. If you were interested in recapitulation you'd be a student of: (a) geology, (b) astro-physics, (c) biology, (d) abnormal psychology.

METER-OLOGY

Can you identify the following meters? (Par.—7 correct.)

(1) Anemometer
(2) Barometer
(3) Bolometer
(4) Calorimeter
(5) Galvanometer
(6) Heliometer
(7) Hydrometer
(8) Micrometer
(9) Photometer
(10) Pyrheliometer

NUMBER, PLEASE

Each of the following scientific numbers has a certain significance. How many can you identify? (Par.—4 correct.)

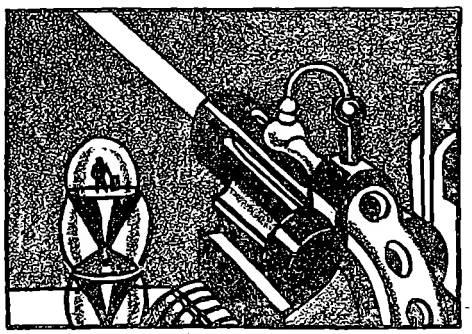
1. 186,000 2. 32.2 3. 98.6 4. 3.1416 5. 1087

Another SCIENCE QUIZ in the Next Issue

THE GREEN RAY

A Novelet of the Twenty-first Century

By ARTHUR L. ZAGAT



In the Next Issue of THRILLING WONDER STORIES

THE DUAL WORLD

Tommy Strike Wants to Catch-'Em-Alive on the Lost Continent of Venus, but an Amazing Race of Twins Catapult Him Into Double Trouble!

By ARTHUR K. BARNES

Author of "The Hothouse Planet," "Green Hell," etc.

CHAPTER I

The Lost Continent

THE space-ship loomed like a mysterious monster in the hot, swirling mists. It lay quiescent on a vast, lonely stretch of hard-packed beach. Immediately westward, barely to be seen in the eternal fog, lay the sluggish gray wastes of the Mare Gigantum, greatest of all the Venusian seas. The Solar tide was creeping in, and steaming waves charged the shore like bulls with lowered heads.

Two men crawled about the gleaming hull, equipped with magnetic shoes. Both wore antiseptic helmets, as they worked slowly forward from stern to bow. The foremost carried a heat-ray gun, with the beam diffused and spread wide. Every time he came to one of the many ugly yellowish blotches that dotted the hull, he rayed it out of existence, then moved on. Tommy Strike, co-captain of one of the mightiest ships in the System, was doing out of sheer ennui work fit for the lowliest motor-oiler in the crew.

"Granted," Strike grumbled to his long-suffering companion, "I don't know anything about handling a centrifugal flier like this. Just the same, Gerry made me co-captain, and it's my duty to learn. But every time I slip into the pilot-house she runs me out. Says I'm like a man in a kitchen, with a positive genius for getting in the way!"

"Yes, sir." Sub-pilot Barrows carefully examined a spot cleared by the blast of Strike's weapon, looking for evidence of pitting. If he found any, a spray of liquid metal quickly remedied the damage. "Yes, sir, I believe the periodic wind has about subsided."

"You'd think she'd at least let me head one of the hunting parties. I know a damn sight more about this planet than any of the others. But no, one of the captains must remain with the ship, and Gerry Carlyle *always* leads the hunt! So my orders are countermanded, and I sit around twiddling my thumbs. . A guy don't mind being babied part of the time, but I want to marry a woman, not a flock of apron strings!"

"Yes, sir. I guess we're about through, sir." Barrows was trying desperately to change the subject.

"I tell you I'm ripe, Barrows, ripe for rebellion!" Strike waved his gun around in good-natured melodrama. But beneath his good humor there was a warning note of seriousness.

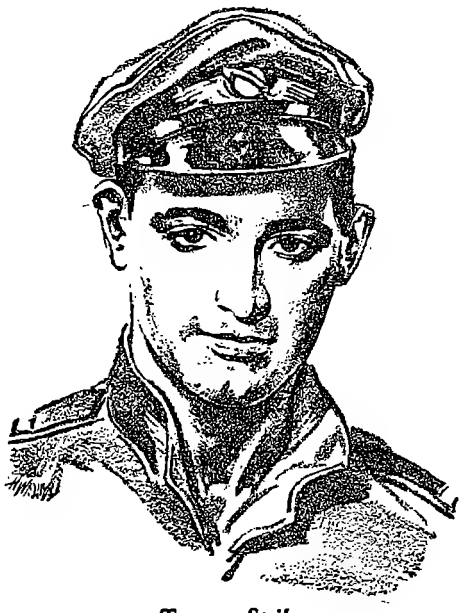
"Yes, sir," said Barrows, still trying. "Amazing how versatile these bacterial colonies are, particularly in these latitudes."

As he spoke, a culture sailed up on the dying wings of the breeze and smacked right across the name-plate of the *Ark*. It was a nasty, gummy mess. Strike rayed it viciously.

"Not so amazing. Back on Earth bacteria multiply rapidly as sin. They have great adaptability; they have motility; they release acids and virulent toxins. Small wonder these giant bacteria have

A COMPLETE INTERPLANETARY NOVELET

The Emotionals poured out of the mist



Tommy Strike

developed further in conditions like these," he sent his heat-beam hissing into the fog, "so they ride the periodic winds and destroy nearly everything they touch. Infection is terribly fast on Venus."

AS soon as the regular air raid of bacteria and fungus spores had ceased, the ship was quickly cleaned. The two men scrambled awkwardly to the ground, made their way to an open port. It was like stepping into bedlam. The entire rear half of the ship, partitioned off into numerous holds for comfortable transportation of the strange life-forms that were the expedition's objectives, was in a terrific uproar.

Squeals, yowls, hisses, roars—every conceivable variation of audible animal fury assaulted the ear-drums. For "Catch-'em-alive" Carlyle, as usual, had been extremely successful during her brief visit to the unknown northern latitudes of Venus.

Almost hourly the hunting parties returned with magnificent specimens—everything from the incredible Atlas crab to the sea squirrel, the little rodent with feet like sea-sleds, which ran about agilely over the surface of the ocean, and whose body contained so much oil that the stuff squeezed out of its eyes and splashed from its opened mouth.

They even had one of the rare and famous bolas-birds, the only flying creature of any size native to Venus, with infra-red-sensitive eyes to pierce the mists. It carried three bony structures dangling from its body on tough strings of cartilage; these were used as a weapon much like the ancient Argentine bolas, to ensnare victims. The bolas-bird was its own worst enemy, frequently strangling itself in the excitement of a chase.

Strike put away his helmet, grimaced at the clamor, and led the way along the main corridor to the chart-room in the bow of the ship. There he found Gerry Carlyle, poring over incomplete maps and faded notes. As always when coming into the presence of that amazing girl, her matchless beauty caught him at his throat. He watched for a moment the familiar curves of her profile, the stubborn chin, the tousled mop of silken blond hair. Then she sensed his presence and turned.

"Hi, Tommy."

"Hi, Gerry." They grinned at each other. They didn't often have moments alone, with all barriers down. "About ready to pull out o' here? We've got a nifty cargo this time."

"Yes. Splendid haul." Gerry thoughtfully took a small tablet from a packet on the table, put it in her mouth to suck.

"Good Lord!" Tommy said in disgust. "Just because you endorsed those things is no sign you have to use 'em, too! Why—"

"The Energine people gave me a fat check for that endorsement; I believe in loyalty to an employer. Besides, they're not so bad. 'Be Buoyant—Eat Energines!'" She laughed. "As I was going to say, though, our hunting is about finished here, and I'll be ready to leave after we make a try at finding the Lost Continent."

Strike's eyes gleamed. The Lost Continent of Venus, a myth, a legend, a romantic fabrication of fictioneers based on a scrap of map, a half dozen lines in a log-book. Sidney Murray, greatest of the early interplanetary explorers, had hastily sketched in a few cryptic lines on his Venusian map, in-

dicating a continent or large island in the Mare Gigantum; six sentences in the log told of passing hurriedly over this uncharted region as they left the planet. From that day henceforward no Earthman apparently had ever set eyes on this mysterious land and returned to tell of it.

"You know," mused Gerry, "it's funny no one but Murray ever saw this elusive continent or island. Others have tried to find it, too. In fact, some have searched for it and never returned. Odd—"

STRIKE was reminded of his grievance.

"Well, we'll know more about that when and if we locate the place. No use speculating about it. But look, Gerry. I've been thinking—"

"Hear, hear!"

"—That despite the fact we've had a successful trip, there's still lots of room left in the holds. So I was wondering—"

"Well?"

"Well, I'm more or less extra baggage around here, and I thought nobody'd mind if I roped in a few specimens of my own. I could pick up a pretty fair piece of change for 'em back on Earth. Enough maybe to buy a marriage license and post the bond." That was during the brief political tenure of the Domestic Tranquillity party—referred to as the D. T.'s by the opposition press—one of whose platform planks was the posting of a bond by every prospective husband and bride, to be forfeited upon failure of either party to do his or her utmost to build a happy home.

Gerry looked dubious.

"There's a standard price for most of this extra-planetary stuff, you know, and it's plenty high. Not many places can afford it. Besides, there aren't a half dozen zoos on Earth equipped to maintain Venusian life. You weren't figuring on under-selling me and the other hunters to the regular buyers, were you?"

"Lord, no, Gerry! As a matter of fact, I'd thought of selling them to the motion picture people. Nine Planets Pictures—" Strike's voice tralled off into nothingness. Gerry's smooth white jaw had suddenly become firm, and anger sparkled in her eyes like salt on candle flames.

Gerry Carlyle

"That outfit of phonies?" she cried. "Never! That's something I absolutely forbid, Tommy! The movies! Why, that whole business is a rank fake! Papier mache sets, sound dubbed in after the picture is filmed, half-scale tin space ships for their interplanetary sequences. . . But what gets me is what they do when they want a Jovian or a Venusian monster for one of their cheap melodramas.

"You know what they do? Their overpaid bio-chemists get busy and manufacture a creation with no more life or soul than a robot. Press a button and he swipes the heroine; press another and he eats the villain. And Nine Planets Pictures has the colossal nerve to foist these things off on the public as the genuine article! It's false, Tommy! It's not right! They're fakers!"

"But what magnificent fakers," murmured Strike, softly so Gerry wouldn't hear. Barrows had come in and was hovering anxiously about, trying to avert a quarrel, exuding peace and good-fellowship all over the chartroom.

But Gerry's tongue was in a favorite groove, her feud that was becoming the delight of the System. She always took as a personal insult any fancied slight upon her profession or the strange life-forms with which it dealt.

"The main reason I'm even bothering to look for this doubtful Lost Continent is because Nine Planets is making a picture called 'Lost Continent.' A week before we took off from London, that baboon Von Zorn came pussyfooting around my business manager. Wanted to know if I intended to bring back any specimens from the Lost Continent.

"He knew it'd make him look silly. So he made me an offer. 'My dear Miss Carlyle'." Gerry was an excellent mimic. "'If you could—er—see your way clear to — um — represent Nine Planets Pictures on your forthcoming expedition—ah—it would be worth a good deal to us. Something spectacular, you know? To—uh—place in the lobby of Froman's Mercurian Theatre the night of the première.' He made that proposition knowing very well I'd have to break my contract with the London Interplanetary Zoo to agree. You can imagine what I said to him."

"Yes. I can imagine." Strike began to look uncomfortable.

Barrows fluttered.

"So if we find anything interesting, we'll arrange to make Von Zorn squirm when he releases his picture. . Oh, no, Tommy. No specimens for the movies. That's out!"

TOMMY STRIKE could usually take Gerry's domineering attitude for what it was—a hard-talking, tobacco-chewing sort of bluff that she put on to command the respect and complete loyalty of a crew of the so-called stronger sex. But sometimes her act was a bit too realistic. This time he had to choke back a hot retort. He smiled equably.

"So the captain hates the films."

"Exactly. Besides, all the boys are busy on routine stuff, Tommy."

"I might pick up a few commercial specimens myself," he argued mildly. "I'm not exactly a stranger here, you know. I can get around."

Gerry groaned. "Oh, Tommy. Don't you understand anything about discipline? How many times have you read those signs? Don't they mean something to you?"

Strike didn't bother to look up; he knew those signs by heart.

If the rules governing conduct in this ship seem severe, remember they are the composite of years' experience, calculated best to serve the interests of economy and personal safety.

Gerry had a weakness for polysyllabics. Above the annunciator was another one.

We are in a dangerous trade. Failure to cooperate fully jeopardizes the lives of your companions and courts disaster.

Similar Carlyleisms were placed in strategic spots all over the ship, in the control rooms, crew's quarters, and even the washrooms, sentiments designed to inculcate strict obedience and complete submergence of all personalities to that of Gerry Carlyle. Strike had always felt that while they were essential to insure smooth work and a minimum of accidents with a party strange to the planet, they were never meant to apply to Tommy Strike, who knew Venus as only a veteran Venusian trader can know it.

But now Gerry turned the full battery of her eyes on him. And for a moment all the unmaidenly efficiency and businesslike hardness fell away from her like a poorly fitting cloak, and she was all soft and tender and desirable.

"Tommy," she whispered. "Don't you see these rules are for my sake, too? What would happen to me if you went off alone and didn't come back?"

Strike felt his resistance draining away as if a spigot had been turned inside him. "Okay, Gerry," he said. "You win."

But in Strike's cabin was a contract signed by Von Zorn, offering generous rates for anything Strike brought in from the Lost Continent. Gerry or no Gerry, there was big money to be made, money that would remove from Strike the stigma of fortune-hunter when he married the girl.

He looked calculatingly at Barrows.

He had always considered the sub-pilot a weak vessel, but he couldn't hope to entice any of the others away from Gerry. He decided on a surprise attack.

"Well?" whirling on Barows. "Are you with me or against me?"

Barrows choked. "I beg your pardon, sir, I don't quite—"

"You know damn well what I mean. I'm taking a shot at finding the Lost Continent before Gerry does. If I find it, we're in the money."

Barrows hesitated, but three minutes' vigorous argument persuaded him. Glancing furtively down the metal corridor, he muttered, "Quite against the rules, sir. But if the captain is ordering me—"

"Right! It's an order, then. Pick up the necessary equipment and set a beam. I'll have a plane on the beach in a jiffy."

Barrows had a momentary twinge of conscience.

"What will Miss Carlyle say when she learns you've disobeyed her?"

A beatific expression spread like thin oil over Strike's face.

"Don't worry, Barrows; she'll realize that her remarks were hasty. She'll forgive me," he declared with the unbelievably confident ego of a young man just fallen in love, "because she loves me."

CHAPTER II

The Arkette

THE tremendous power plant of a centrifugal flier was impracticable for use in any vehicle so small as an airplane; rocket fuels were wasteful and expensive. So the Carlyle party always carried two small ethyl-driven planes for scouting on planets where the atmosphere would support them. It was one of these that Strike trundled out onto the smooth-packed beach from the rear of the *Ark*.

It resembled the conventional small all-metal transport in all respects save three. First, it had retractable pontoons as well as retractable landing-gear, so it was at home on land or sea. Secondly, it had a seventy-two inch gyradoscope which developed a static pressure of thirty pounds per horsepower, as compared to maximum propeller efficiency of six static pounds per horsepower.

This, besides saving fuel, gave the plane a top speed approaching 1,000 miles per hour. And thirdly, a battery of electronic telescopes reproduced on the visual control screen, regardless of the atmosphere's thickness, a miniature shell of visibility, bisected by the horizon and including the sky above and the terrain below the pilot, and everything on either side, for many miles.

Strike had hardly checked gas and instruments when Barrows ran out. There wasn't much equipment: two rifles with a box of hypodermic bullets, anti-gravity outfit, tiny acousticon receivers for each man to slip into one ear so as to keep on the radio beam, a cathode-gun for emergencies, Strike's heat-beam pistol, and portable telescope.

As Barrows started to step inside, the tail of the plane created a diversion by slowly sliding about in a half circle on the beach. The sub-pilot missed his footing and collapsed in a tangle of equipment.

"Another of those blasted Atlas crabs," Strike swore. "They aren't happy unless they're crawling under something heavy and lifting it."

He sizzled a heat-ray under the tail assembly, and a violet crab scuttled out. It was about the size of a pie-plate, weighing perhaps two pounds. Barrows glared.

"How the devil that mauve menace can handle a ton of duralumin is something I'll never know! Begging your pardon, sir."

Strike helped him up, shoved him in with the equipment.

"Not so strange if you remember the Hercules beetle back on Earth. That baby weighs about an ounce, yet can carry five and a half pounds! Figuring the proportionate increase in size, the Atlas crab's accomplishments aren't so miraculous."

Barrows' reply was unintelligible. Presently his head popped into view again.

"All ship-shape, sir. Shall we take off. . . . Oh, look. What sort of a plague is this?"

Strike turned to see a horde of tiny creatures scurrying from out of the fog-hidden forest. They were fuzzy gray things, about the size of terrestrial rabbits; the resemblance was heightened by the way they hopped, and by the presence of a tuft of white tail. But head and shoulders they looked more like naked monkeys, with wrinkled faces like little old men. Strike grunted.

"Never seen them before? We call 'em dunce-rabbits. They're migratory. Terrific pests."

The dunce-rabbits were consumed with friendly curiosity and were already swarming all over the beach; some of the bolder ones were even bouncing right into the *Ark*.

"Dunce-rabbits?" Barrows inquired.

"Yeah. Their life-span is about a year, at the end of which they all go crazy."

BARROWS looked as if he thought he was being kidded, but was too polite to say so. Strike continued.

"Fact. The bugs of some sort of meningitislike brain disease are carried about with 'em. Very virulent, and always fatal as soon as they get to work. The whole race of dunce-rabbits is wiped out once a year. It's funny in a way; they have fits and go through all sorts of contortions, like a circus clown."

"Um. Then how is it the race maintains itself?"

"Oh, they're monotremes. The females lay their eggs shortly before the periodical madness sets in. The young live on the contents of the eggs until large enough to forage for themselves. Orphans, every one!" Strike looked thoughtful a moment, then scooped up three of the little beggars and tossed them into the plane. He followed, "All set?"

Barrows looked uneasily at the guests, but Strike reassured him.

"Don't worry. They can't affect us. I brought 'em because sometimes they're useful. Like homing pigeons; keep 'em in one place a few hours and they'll come right back to it!"

A touch of the starter and the plane's powerful engine burst into muffled thunder. No need for much warm-up in those temperatures, so almost at once Barrows guided the plane down the illimitable beach which unrolled like an endless ribbon from an invisible spool always just out of vision's range. Presently it dropped away, narrowed as it rushed more and more swiftly beneath them, then veered magically away and was replaced by leaden waves. Straight northwest over the Mare Gigantum the stubby *Arkette* headed, seeking the Lost Continent of Venus.

The three little strangers squalled plaintively in fright. The first one covered his ears at the unfamiliar engine-roar; the second took one look out at the vanishing beach and put his paws over his eyes in panic; the third clapped one paw over his mouth in a ludicrous expression of astonishment. It was too much, even for Strike's surly mood.

"See no evil, hear no evil, speak no evil!" yelled Tommy Strike hilariously, and both men bellowed with laughter.

STRIKE always said afterward that the finding of the so-called Lost Continent was anti-climax, they accomplished it so easily. In fact, it gave him an uneasy qualm or two, almost as if the place deliberately revealed itself to them, enticing them down to some subtle snare.

Barrows was still at the controls after an hour's steady flying, when Strike noticed the curious behavior of some of the instruments.

"That's odd. Must be some sort of radiation nearby. This should mean land."

He was right; it did mean land. Directly ahead, just coming into focus on the visual screen. Barrows throttled down, confused by his erratic instruments, and circled about cautiously. Almost at once he spotted a large level clearing. A rift in the fog allowed him to set the *Arkette* down easily. And almost at once there came a terrific thunderclap, the sizzling crackle of a bolt of electricity. There was the hiss of molten metal, the smell of ozone.

Barrows and Strike exchanged a startled glance. Ionized air had transmitted to them a partial shock, but both were insulated somewhat by their rubberized Venusian costumes and the rubber floor mat. Strike peered out cautiously.

By the nose of the plane was a curious plant growth, the sole living thing in the entire clearing. It had three parts: there were two upright stems of tough, leathery stuff, one rising on each side of the plane; in between was a large, flat cup oozing a sticky substance from its walls. As Strike watched, the two stems moved slowly about as if seeking a more vulnerable spot. Again the dazzling bolt crashed from one stem to the other, apparently straight through the motor.

"By Jupiter!" Strike exclaimed. "It's an electric plant! The two stems act as poles. It generates juice galvanically, like an electric eel, and shoots its bolt from one pole to the other! Anything it hits naturally drops into the nasty-looking cup to be digested forthwith!"

"Yes, sir."

Strike gingerly opened one window.

"Get a load of that smell!" It was a heavy musklike odor spiced with mint. "Lures things with the smell, probably has a network of sensitive rootlets to register the approach of a victim, then gives 'em the hot seat! Good name for this jigger would be the Circe plant, eh?"

"Very apt name, sir."

"Though you'd think, the plant being grounded, that its c h a r g e would all leak away. Must have some way of sealing off its cells before generating the electricity."

"Yes, sir."

Strike turned scowling.

"Damn it, Barrows! Don't sit there yessing me dizzy! Contribute something to the conversation or else shut up!"

"Very well, sir. I suggest we take steps to eliminate the plant before it eliminates us. If it's not too late." Barrows' voice was bitter.

"What d'you mean 'too late'?"

"Just that every electrical instrument on the dash is ruined."

Tommy Strike wasn't the man to bother much about disaster until it actually struck. "So what?" he wanted to know. "Our acousticons are all right. We can just follow the beam back to the ship. We know there're no obstacles sticking out of the sea on our course to crack up on."

He drew his heat-ray gun and leaned out, careful not to touch any of the m e t a l of the plane, and beamed the electric plant into smoking, twisted extinction. The two men clambered out and looked around.

"No wonder this clearing is so large and barren," commented Strike. "Nothing will grow anywhere near a devilish plant like that."

BARROWS' conscience, and worry over their situation, had made him nervous. He was anxious to get the business over with. He disappeared into the plane again, reappearing loaded down with equipment. He handed Strike a rifle and hypo cartridges, and the cathode-gun to stick into his waist-band. About his waist he strapped the anti-gravity outfit, and carried by hand the portable electronic 'scope.

"Shall I start the radio, sir? We'll need a beam to travel on."

"Nope." Strike became more genial as action grew imminent. "We'll take a compass just as good as that." He pointed to See-No-Evil, Hear-No-Evil, and Speak-No-Evil, scampering about the plane. "They'll bring us back safe. We used 'em often at the trading post when they were handy."

Barrows began to sweat. All his years of training w i t h Gerry Carlyle had drilled deep into his soul the need for every precaution, rigid discipline, strict routine. This casual young man who wandered off into the Venusian mists w i t h nothing but three potentially insane dunce-rabbits to bring him back was too much.

"But suppose something should happen to them, sir. What, then?"

"Well, we're still on the beam from the *Ark*. That'll bring us back to the general neighborhood of the plane."

"Yes, sir, but it's so simple just to start the automatic radio beam. It would ease my mind."

"If you must know, Barrows, someone thoughtfully removed the tubes from the radio before we left. I have my suspicions about that. But in any case, it's a total loss now. So let's get going. I certainly don't want to get caught out here at night."

"Very good, sir."

They moved off through the thickly sluggish fog, with all its weird smells and sly noises, in the peculiar sliding gait of the experienced Venusian traveler that keeps the feet from driving very hard into the spongy earth. At the edge of the clearing a lizzard scuttled past them into the scant undergrowth. It was an ordinary Venusian lizard in most respects, except that there were two of him, joined together like Siamese twins. Strike stared.

"Say! Did you see that? A freak. Might be worth taking back as a curiosity." He poked the rifle barrel into a clump of bushes. Instantly a whole horde of the scaly things rushed out in all directions. The whole lot of them were twins, joined! The dumfounded Strike forgot to catch any.

"Well, I'm damned. A race of twin lizards! We must have a few of those, Barrows. Keep an eye out for another batch."

They pushed on, making careful observations through the portable 'scope. When they ran across a baby shovelmouth feeding, it was not one, but two of them, identical in appearance and markings. The land-crabs all moved in pairs, frequently joined shell to shell by a chitinous bridge. Even the occasional trees and shrubs grew two by two.

Strike soon saw the light.

"It's a dual world!" he breathed in awe. "Everything here is born twins!"

"I've been thinking about that, sir," the sub-pilot answered thoughtfully. "Remember how funny the instruments acted before we landed? A radiation of some kind, you thought. Why not one that affects the egg-cell, causing it to divide, or affecting the genes to cause the division, to produce twins?"

"You've guessed it. Earthly scientists have done it in the lab. Why shouldn't it occur in nature? In fact—" Strike stopped, eyes narrowed at a pair of slim, rubbery trees a few feet away. Normally they stood about fifteen feet high. But—"

THE young space explorer hesitated for a moment.

"As we've stood here talking, Barrows, one of those trees wrapped about the top of the other and pulled its mate back. Like a sling-shot—" He detected a stealthy movement in the skimpy foliage, and suddenly grabbed Barrows' arm and dragged him back out of danger. There was a creaking, a sharp rustle, and a vicious whip-crack as the rubbery trunk lashed out at them like a catapult. The two men were out of harm's way, but the dunce-rabbit Hear-No-Evil was struck squarely across the back. Nearly every bone in his little body was broken, and he collapsed like an empty sack on the ground.

The sling-shot tree moved very deliberately toward its victim, turning like a sunflower, touched the shattered creature delicately like a cat sniffing garbage, then slowly withdrew.

"That was wanton," Strike said slowly. "Cruel. I don't expect mercy on Venus, but I never yet saw killing up here that wasn't for sake of survival —food or self-defense. This Lost Continent is a nasty place."

But unpleasant place or not, Strike was there to capture a real prize, confound that self-sufficient fiancée of his, and make himself some money. So he detoured around the sling-shot tree and thrust forward into the murk. Within three minutes after leaving the *Arkette,* they both spotted what they realized would fit every requirement—a specimen spectacular, weird, typical of the Lost Continent, something for which Von Zorn would pay well. It was Barrows who saw it first.

"Mr. Strike," he whispered. "Straight ahead. D'you see what I see?"

Strike peered at the telescope's screen, sucked in his breath in sudden delight.

"Good God!" he murmured. "What is it?"

That was a question Barrows couldn't answer. It was easily one of

the strangest animals he had ever seen in five years expeditionary work with Gerry Carlyle. The thing had a perfectly round body some four feet high, and it ran on four legs. But amazingly, it carried eight spare legs. One set of four protruded from the left side of its back at a forty-five degree angle; the other set protruded from the right side at a similar angle. In the center of its head was a mouth surrounded by three eyes forming the points of a triangle. The thing was triplets! No matter how it rolled, or which side was undermost, it would always be upright!

Strike quivered with anticipation. He could see Von Zorn's face when he brought this beauty home. He could see Gerry's face, s l i g h t l y green, as he showed her his check. He could see—

"Hey! He's moving off. Don't let him get away!" He pumped a shell into the chamber and slogged rapidly through the fog. He and Barrows caught up with their quarry in time to see a strange duel.

It was very brief, over in a few seconds, this contest between the twelve-legged monster and another of the deadly sling-shot trees. As the animal trotted slowly along a dimly marked game trail, there sounded a swish and crack as the tree attacked. But the dodecaped simply allowed himself to be knocked rolling off to one side, came up on another set of legs, and trotted serenely on just beyond the baffled grasp of the tree.

Strike hugged himself in delight; this was marvelous.

"Nature's balance," he h i s s e d. "Everything has its match somewhere—"

"Yes, sir; I know. But he's getting away again. Give it to 'im!"

STRIKE whipped up the hypo rifle and fired. Twelve-legs whirled, nipped at the wound, then began to gallop heavily away. Barrows and Strike ran after him. In a minute or so the drug began to take effect, and the victim stopped with head hanging, wobbling at the knees.

"Got 'im!" yelled Strike in triumph. But too soon. Twelve-legs rolled over onto another set of legs and started off like a sprinter.

"What!" yammered Strike. "That's impossible. He can't do that!"

"If he's three animals rolled into one," cried Barrows, throwing his own reserve gun to his shoulder, "each part may be more or less separate from the other. So while the drug paralyzes one-third of 'im, it takes longer to penetrate to the other two-thirds."

Barrows fired just as the dodecaped dissolved into the mist. The two men ran ahead and soon caught sight of him again, wavering weakly on v e r y unsteady legs. And for the second time he rolled awkardly onto his third set of legs and ambled off. Not so vigorously this time: the drug was already beginning to affect the last one-third. Strike finished the job with a final bullet. Twelve-legs lay quietly down to sleep.

It was the work of a moment to slip the anti-gravity bands around him, adjust the power to the exact balance between gravitation and centrifugal force. The captive hung in the air, gently tugging on his leash, like a gigantic potato sprouting weirdly in every direction.

Strike thrashed about in the undergrowth until he found Speak-No-Evil and See-No-Evil, then started back in the general direction of the plane. At once the dunce-rabbits seemed to understand, and frolicked ahead of the hunters with an uncanny sense of direction. They had nearly reached the clearing again when Barrows, who was leading, stopped so suddenly that Strike catapulted into him from behind. Twelve-legs also floated up and gently nudged the two of them.

"What the devil?" Strike wondered.

Barrows pointed with a nervous finger. "It's a man, by Jupiter! It's a man!"

CHAPTER III

The Twin Race

IT wasn't a man, as closer inspection revealed. But anything that stands upright on Venus is easily mistaken for

human in the eternal misty shoud. And the stranger certainly stood upright; he could scarcely do otherwise with his six legs. They grew at evenly-spaced intervals from around his waist, long and slim. Two of them apparently served also as arms, judging from the way he scratched at his rounded abdomen, hanging like a ripe fruit inside the forest of legs.

From the waist down he reminded Strike of an earthly octopus, or a spider. But from the waist up the creature was definitely manlike, with conventional torso, neck, and head.

"That," said Barrows uneasily, "could be a dangerous customer. See those claws, and the armor-plate all over his body, and the fangs!"

"Yes, but look at his face. He's bound to be peaceful because he's a congenital idiot. Just look at the expression!"

Both men stared fascinated at the play of emotion across the thing's countenance. Expressions succeeded each other fleetingly with the rapidity of a motion picture—exhilaration, fear, surprise, anger, boredom, love, and sometimes just plain nothing. Like a ham actor trying to register everything he could in the shortest possible time.

"Apparently he's prey to every emotion in the book," Barrows suggested. "No selectivity. No brains at all."

Strike raised a palm in the universal gesture of friendship.

"Hi, fella," he called tentatively. No result. The stranger was joined by three more of his kind, and they milled around in aimless curiosity.

Strike tried a few syllables of the native lingo he had learned as a trader in the southern latitudes. No response. Presently the four creatures wandered off haphazardly through the fog. They fought, showed affection, sulked, and pranced in bewildering inconsistency.

After about five minutes of random circling, the four beings suddenly raised their heads simultaneously, stood a moment as if listening intently, then loped off in a straight line. Strike scooped up the two dunce-rabbits and stuffed them inside his tunic so as not to lose them, and followed. Barrows tagged along perforce.

"Funny how they all decided to go the same direction at once. I didn't hear anything, did you, sir?"

Strike grunted. This running around in the stifling Venusian atmosphere was making him pant like an ancient steam engine. He was also faintly concerned about getting entirely off the beam from the *Ark*. Already the steady tone faded down to an intermittent warning note. The dunce-rabbits might not be infallible, of course, and if they moved further to the side—

Fortunately they did not. The four creatures led them only a short way, stopping soon before a structure with the appearance of a giant bee-hive punctured by numerous entrances. It seemed to be a sort of community igloo built of several individual mud huts joined in a cluster. There were perhaps a score of doorways, and before each opening sat the amazing counterparts of the six-legged morons. They were counterparts in physical structure, that is, but not in mental capacity. For their enormous brain cases and haggard expressions indicated obviously that here were beings whose sole aim in life was to cerebrate. As each of the original four took position beside a different one of the thinkers, Strike saw the light.

STRIKE cried out.

"Twins again!" he exclaimed delightedly. "See? Each pair is twins. You can tell if you examine 'em feature by feature. One is entirely emotional. Get it, Barrows? Evolution's greatest experiment. Complete divorce between the intelligence and the emotions, so the former can work unhampered by the vestigial remnants we call emotions! It's what earthly philosophers have dreamed of for centuries!"

"I'm going to dream of it for some time myself. It's a nightmare."

"You don't see the beauty of it, Barrows. Look. The Intellectuals think things out to a perfect conclusion by pure, unadulterated reason, then instruct their emotional counterparts to carry out their decision. The Emotionals must be the active, executive half of the combination, to be used only when there's work to be done. That's why they're so fully equipped, fang

and claw, to do battle. It's their job to bring food, protect the home, reproduce.

"See? If the Intellectuals decide something ought to be destroyed, they probably tell the Emotionals to generate a lot of hate and go out to do the job. If they reason it's time to mate, they pull out the love stops on the twins, who—er—"

"Yes, but how does this communication take place? I haven't heard an audible syllable yet."

"Telepathic control, of course. If any individuals are more nearly *en rapport* than others, it's twins."

"Hm-m. It occurs to me we may be a little reckless, Captain. We don't have any idea what's going on in those brains until the action starts. And judging from the head size, some pretty potent thoughts may be boiling around in there."

"I disagree, Barrows. Size doesn't necessarily mean brain-power. Venus is too young to permit any colossus of intellect to be developed yet. After a few more geologic ages, maybe, if the experiment is a success, our friends here will be the cosmic tops. But not now. Look at their homes. Crude in the extreme. No evidence of mechanical development, or any kind of invention. No weapons, even."

"Because naturally they have no emotional urge to develop. They don't care about progress, or appearance, eh?"

"Right. I'll wager they wouldn't care whether they lived or died if it weren't for an instinct for self-preservation. They respond only to simple nerve stimuli such as discomfort, weariness, hunger and so on."

"Then what do they think about?"

Strike shrugged.

"Hard to say. Maybe to them the discovery that two p l u s two is four would be the finding of a great philosophic postulate." He stepped closer and tried his native Venusian on the Intellectuals without result. They simply sat staring at the Earthlings, sad-eyed and mute.

"Maybe we're not enough developed for their telepathic efforts," Barrows snickered.

"No-o. It takes either a receptive mind or a mind easily controlled to make telepathic contact. I was wondering if we could take a pair of these along with us. We—"

"Contrary to law, sir. No interference with life having an intelligence over a certain level. Eighth, isn't it?"

"Yeah. You're right this time. Besides, it might stir up a fuss." And the two men stood there, watching the strange tribe of twins, wondering what to do next. That problem was taken from their hands by See-No-Evil and Speak-No-Evil. Annoyed by their confinement in Strike's tunic, they wriggled free and dropped to the ground. In an instant the village erupted in an astounding flurry of activity.

IT was like a well-rehearsed bit of continuity, smoothly presented, over in a flash. The dunce-rabbits scampered about to limber up cramped muscles. The Intellectuals promptly but calmly turned around on unsteady legs and vanished inside their huts, to the last man. The Emotionals, momentarily blank-faced, suddenly burst into a hideous cacophony of squalling and yowling.

Fear written in large letters on their faces, they scattered wildly into the shelter of the fog in all directions. The act was completed as the Intellectuals closed the entrances to their abode by swinging into place what appeared to be a shimmering shield of crimson tissue of some sort. The clamor died away to silence.

"Well!" exclaimed Strike. "Would you get a dish of that!"

Barrows was definitely worried now.

"Yes, sir. Perhaps they're allergic to dunce-rabbits. But wouldn't we be wise to leave—"

But Strike was already marching up close, examining the doorways of the community house.

"Say, Barrows! This red thing's a gullet. What they have in the doorways here looks like a tropical fish, only his mouth is wide open all the time. He's as big around as he is long!"

Strike poked and pried and finally learned the secret. The fishlike creature lived on the bacteria colonies and

fungus spores that floated in the air, straining them out before passing the air on through the gills. Filling the aperture completely with its bulk, it thus cleaned the air before allowing it to pass into the interior.

"Air-conditioning!" p r o c l a i m e d Strike. "Venusian style!"

"Yes, sir. Nature's check-and-balance again. I remember my grandmother once told me that her people years ago used to get water from holes in the ground, and they used to drop a pike in these wells so it'd eat all the worms and bugs and keep the water pure."

"Same principle exactly. They hang these domesticated babies in the doorway 'til they get so big they no longer fit. The Intellectuals naturally aren't fitted to cope with disease, or anything physical—no resistance. And the reason they're so afraid of the dunce-rabbits is because the little beggars carry with them the seeds of madness. See?"

Strike turned to gesture to Barrows, but saw only the sub-pilot's heels as the latter sprinted wildly away into the fog. Strike glanced about sharply, and saw the entire horde of Emotionals running at him with expressions of indescribable hate and gerocity. The Intellectuals had given the command to destroy.

Strike's heat-beam hissed in a half circle. It had no effect whatsoever. He concentrated the beam to a narrow, stabbing bolt of flame; it barely blackened the flesh of his attackers. Too late he remembered: this was the gun he had used to clean off the *Ark*. Its charge was almost completely spent! With one motion he stuck the weapon back in his belt and dashed away after Barrows. Sudden death thundered at his heels.

EARTH-TRAINED muscles easily outran the pursuers, and a miracle of good luck led the two hunters straight to the big clearing, despite Barrows' loss of the electronic telescope in his flight. There was no time to stow away their specimen, so Strike hurriedly fastened lead-rope and anti-gravity apparatus to the tail-skid.

The weightless dodecaped shouldn't interfere with flying the plane; they could set down safely in the sea and do the job right later on. Quickly Strike scooped up See-No-Evil and Speak-No-Evil, tossed them in the plane. As he reached up to follow, the tail of the plane deliberately c r a w l e d away. Strike stumbled and cracked his chin.

"What, again?" Strike risked a hasty look under the tail. "It's that Atlas crab! Probably a stowaway." He yanked the big crustacean out and tossed him into the cabin, too. "I wouldn't leave a mother-in-law in this hellhole!"

T w e n t y wild-eyed Emotionals poured out of the mist and attacked the plane with an unbridled savagery that made even the hardened Strike gasp. He fired his gun at them again, futilely, then leaped in with Barrows and slammed the door.

With absolute disregard of consequence the creatures ripped viciously at metal and glass with their claws, bit at them with hideous, drooling fangs. The whole plane rocked dangerously from the furious attack.

"Good God, Captain!" quavered Barrows. "Let's get out of here!"

"Right!" Strike turned on the ignition, stepped on the starter. The engine did not start. Again he tried, and again, with no result. Finally he looked at Barrows sideward.

"That damn Circe plant! It probably ruined the wiring and ignition. And we can hardly s t e p outside to make repairs."

Barrows began to crack.

"Then we-we're finished. No motor, no radio. I knew I shouldn't have disob-obeyed Miss Carlyle. She's always right. We never should have tried it alone."

Strike simmered.

"Never mind moaning about Gerry. We're a long way from being finished yet. Give me that cathode gun."

He took the cumbersome pistol, lowered one window a slit to slip the barrel through, pulled the trigger. Nothing happened. Strike began to curse bitterly. The cathode gun worked with a delicate "electrical trigger." It had been fastened in contact

with the metal dashboard when the Circe plant's charge passed through, and the mechanism was blown out.

"Perhaps the hypo rifles—" Barrows suggested without conviction.

"Not a chance. Those hypodermic slugs are made to burst as soon as they enter soft flesh. They'll never penetrate these armor-plated devils." Strike tried, of course, seeking to put his shots in the enemy's eyes. But such marksmanship was impossible under the circumstances.

Barrows' nerves were going rapidly, and his whole body shook in fear. He tried to conceal it in shame, but failed. Strike rallied him.

"Now look, Barrows; don't get the wind up over nothing. Everything's under control. As long as I'm here you don't need to worry."

"I wish the *Ark* were here. Then we'd have no worries."

"You've just had that organization stuff pounded into you so long you can't believe a man's worth anything alone. I tell you I'm a match for anything this planet has got. Think I've showed all my aces yet? Not by a long shot. Remember my gag with the whizbangs? You watch."

Barrows' "Yes, sir," was not hearty.

STRIKE pointed to Speak-No-Evil who had retreated to the extreme rear of the compartment and was running about in tight little circles as fast as he could go, like a spinning mouse. Presently he fell down quivering and kicking pitifully like an epileptic, bumping his head blindly against the walls as he jerked around.

"Periodic insanity," declared Strike. "I've been hoping for that. Remember what started this—the Intellectuals' fear of the dunce-rabbits? Well, suppose we toss Speak-No-Evil into the enemy's camp!"

Barrows nodded slowly. "I see what you mean—"

Strike gently captured the dying little creature, then turned on Barrows sharply. "What's the matter with you? Your lip's bleeding."

"Nothing, sir. I was just thinking. One of us must leave the plane to carry the dunce-rabbit to the—"

Strike laughed shortly, gazing keenly at this man he had considered a weakling.

"So you were going to make the big sacrifice, eh? Now, now, Barrows," he chided. "No melodramatics. I meant it when I said you needn't worry with me along. You just watch the old master strut his stuff."

Strike swelled a trifle. He really had a pretty scheme this time. Opening a small trapdoor in the cabin floor, he dropped the stowaway Atlas crab through to the ground. Then he quickly drew in the landing gear until most of the plane's weight rested on the crab's back.

With the trap still open, he thrust his nearly useless heat-gun down and played the weak beam in a half circle behind the crab, forcing it to move in the desired direction, and move the ship along with it. Using the beam to guide the crab, they slowly crossed the clearing and moved into sight of the Intelluctuals' community house.

Strike rose, smiling a bit grimly.

"They asked for this! Barrows, waggle the tail a bit to distract our friends' attention." He picked up the dunce-rabbit, who was too far gone to respond. "This'll hurt you more than it does me, but it's in a good cause. Ready, Barrows?"

It went off like clockwork. Barrows kicked the rudder bar, the Emotionals rushed down to tear the tail surfaces apart. Strike swiftly stepped out, hurled the dunce-rabbit for a perfect bulls'-eye through one of the openings to the domed structure, then retreated to safety.

He became academic.

"D'you know what I figure should happen now?"

Barrows sat with hands pressed between his knees, shivering.

"No."

"Well, Speak-No-Evil ought to finish off the Intellectuals. That'll leave the Emotionals with no brain control. They'll have to try and think for themselves. And when that happens— Ever hear of the case of Oscar, the pig? It happened many years ago. About nineteen-thirty-seven, I think. Some psychologists placed this experimental pig

in a position so he'd have to try and think his way clear. It proved too much, and Oscar had a nervous breakdown and died. See?"

Barrows saw, and they sat quietly waiting.

Their wait was short. In an incredibly short time Speak-No-Evil's virus was spread to the most vulnerable host it could have found on all Venus. With unbelievable virulence it struck, ravaging the physically frail Intellectuals with the speed of a prairie fire. Even Strike was shocked at sight of the bloody horrors that staggered into view from the community house. From every door they came, smeared with straw-colored blood as cerebral hemorrhages opened the cranial arteries.

It was the more terrible because of the utterly blank expression on those gray faces, which should have been registering pain and desperation. Self-preservation drove them blindly into the open; logic bade them flee Speak-No-Evil and his deadly cargo. But in vain. Before they even had time to instruct their emotional twins, they were stricken helpless by the plague, collapsed in an irregular pattern of untidy bundles on the soggy earth.

BUT Strike's strategy did not produce the expected results. The Emotionals showed no signs of realizing that their tribe was reduced by half. Animated by their mentors' last emotional command—fury and hate and lust for blood—they continued their blindly bitter and senseless assault on the unmoving metal of the plane, hammering and clawing with unabated savagery.

"I guess I was wrong this time," Strike admitted. "I thought surely the twins were in telepathic communications all the time. And when that union was broken, the Emotionals would be like rudderless ships. It's a devil of a time to be finding it out, but it appears Gerry was right again. Not much use saying I'm sorry, Barrows."

"Forget it, Captain. After all, they can't keep it up forever. They're flesh and blood; they'll tire eventually."

Strike shook his head dubiously.

"Rage looses a lot of adrenalin into the system. Angry men are stronger, more enduring, than normally. These playmates of ours won't quit until they drop from exhaustion."

And so it seemed as the attack continued with uncanny lack of diminution. An irregular piece of metal dropped from the roof of the storage compartment, eaten through by an irregular circle of acid. Strike's lips drew down, in amazement.

"Looks like nitric acid, and not poison, in those fangs. Though if bees secrete formic acid, and man secretes HCL, there's no reason why nitric couldn't be secreted." He locked the door between cabin and storage room as the rear of the plane, not having any insulation or soundproofing materials, would be eaten through first. "It's lucky they haven't the brains to know that acid is their best weapon. Perhaps they'll leave when it gets dark. Too cold for 'em."

The sub-pilot fought for composure with every word.

"It's thirty hours before darkness."

The periodic wind had risen again, carrying its deadly freight of wandering bacteria. They were plastering gradually over the surface of the plane. Their acidulous toxins would speed the work of the Emotionals, who were apparently entirely impervious to infection and disease.

Barrows broke out a pair of antiseptic helmets, in case the bacteria should slip through, then sat looking with unseeing eyes at the sign above the control panel:

Individuals have no part in this expedition. We are a TEAM.

Tommy Strike stared helplessly out an utterly alien and hostile world, watching it bring all its untamed powers to bear in a terrible plan for his destruction.

CHAPTER IV
The Rotifer

WHEN Gerry Carlyle first learned that Strike had gone out on his own, she simply smiled sadly.

"Von Zorn's been after him. I know it. Von Zorn's cunning: he's sly. But he didn't reckon with Tommy's fundamental good sense. Tommy won't go far: he'll understand I'm right about these things. He'll be back shortly. Besides, I took the radio out of the *Arkette* just in case. He'll have to return!"

After the passage of three hours and still no Tommy, Gerry chuckled tolerantly.

"Just a touch of pride. He'll show up pretty soon. I know he wouldn't do anything to spite me because," with the incredibly fatuous faith of the young woman in love, "he loves me!"

But when ten hours passed without a sign of the missing duo, Gerry finally felt the brooding sense of impending tragedy. The familiar iron came into Gerry's jaw. She crackled an order into the intra-ship communicator. Chief Pilot Michaels, a middle-aged gray eagle of an Englishman with thousands of flying hours to his credit, hurried in.

"That man of mine," snapped Gerry, "has got himself into a jam, I'm afraid. We leave here in thirty minutes. Prepare to take off, Michaels. On the jump, now!"

All was methodical confusion, then. Outstanding hunting parties were called in, a whiff of anaesthetic quieted the tumultuous specimens in the holds, equipment was stowed away, a hundred and one details attended to with the efficient precision that marked all Carlyle-trained crews. In much less than the allotted half hour the *Ark* was ready to take off, her centrifuge whining with leashed power.

The pilot house was cleared save for Michaels and Gerry Carlyle.

"Will you set the course, Miss Carlyle?"

"Straight northwest over the sea. All we can do is follow the general direction of the beam that Barrows set up before he and Tommy left. Surely not even Tommy is fool enough to leave the beam."

"Righto." Michaels switched on the electronic telescope, gently lifted the *Ark* from the beach. "Might I inquire —d'you have a definite plan for locating the plane, or do we just shoot hit-or-miss?"

Gerry opened a built-in cabinet, brought out and set up a simple-looking apparatus.

"This is a capacity alarm," she said. "The son of one of the Zoo directors invented it. Intended it to be a meteor detector, but I forgot to try it out coming over. It'll have a real test now." She smiled grimly.

There was a single upright metal plate, wired to the grid of an enormous vacuum tube. Several smaller tubes behind the detector tube made the instrument more sensitive. "It works," explained Gerry, "like an electric variable condenser—"

"But I say, it has only one wall. Surely all condensers have two."

"Exactly. Only in this case the second wall is formed by any metallic body which comes within a certain range. When I switch on the current, there'll be a perfect electronic balance in the vacuum-tube set-up. It will be upset by the approach of any metal, which naturally changes the capacity. Any such change is registered on the dial here, and rings an alarm bell."

"Very ingenious," drawled Michaels. "Especially for Venus, which is poor in metals. Don't worry, Miss Carlyle; we'll find Mr. Strike all right. That's a pretty tough lad to hurt."

"Don't be silly, Michaels. You don't think I look worried, I hope."

Michaels smiled one of his rare smiles.

"No, miss. You don't look worried. But I know." He squeezed her shoulder paternally. "Why don't you lie down and try to relax?"

GERRY'S lip quivered just once, then stiffened.

"Familiarity with your captain isn't encouraged here, Michaels. Remember your place, please."

Michaels knew this girl, even better than Strike did. So he simply saluted, nodded, "Righto, Miss Carlyle," and poured power into the *Ark's* giant centrifuges.

About 800 miles out from the mainland, Michaels noticed a curious misbehavior among some of the instru-

ments. He called Gerry's attention to it. "I daresay there's some sort of radiation hereabouts. Land—"

His voice was drowned by a sudden clamor from the metal-detector alarm. Gerry sprang to the dial; it was jerking wildly.

"Stop the ship!" she cried. "The plane is somewhere close by!"

They both stared eagerly into the telescope's fluorescent screen, while the ship hovered, penetrating the mists.

"Land, all right. Probably the so-called Lost Continent." But there was no enthusiasm in Gerry's voice. The *Arkette* was not in sight.

"I'll change the condenser capacity, shorten the range. Then we'll move slowly in one direction. If there's no response, we return and try another direction, until the alarm registers again. By repeatedly shortening the range, we'll find the plane."

It didn't take long. Methodically casting about in the fog like a hound after a lost scent, they spotted the *Arkette*. It bore little resemblance to an airplane. Surrounded by a seething mass of strange six-legged furies, pitted and scored and completely broken in toward the rear where acids had eaten deep, splotched from nose to tail with hundreds of ugly bacteria colonies, it looked like nothing more than a nasty fester spot in the heart of a Venusian morass.

Gerry Carlyle ordered the *Ark* down, then looked the situation over with iron-nerved calm. The sequence of events was not clear. The Intellectuals were an unrecognizable mess of decay already. Twelve-legs kicked feebly nearby as the drug wore off, bouncing gently around, apparatus dangling. While the Emotionals, tireless as machines, bit by bit were tearing the plane apart.

"They can hardly be alive," Gerry observed without a quaver. "But get the broadcasting room, Michaels. Have them try to get in touch with the plane. The *Arkette* has no receiver, so send the message on the beam carrier frequency. They'll pick it up through the acousticon, if—" She swallowed. "Tell Tommy to waggle the elevators if he —if he's alive."

The message was sent, repeatedly. Gerry and every man in the crew watched intently for the answering signal from the *Arkette*. Minutes passed, and it did not come. It never came.

Sharp lines gradually etched themselves across the clear skin of Gerry's face.

"Well, apparently I've killed the thing I love. That's supposed to be man's prerogative. Maybe I've worn pants too long—" She spoke casually, too casually to deceive Michaels.

"That's rot, Miss Carlyle," he said. "The fault is not—"

Gerry whirled on him, and the chief pilot drew back suddenly embarrassed at the wild grief in the girl's eyes.

"None of your namby-pamby sympathy, Michaels!" she cried. "Tommy wasn't one for tears and soft words. He was a fighter, and if he's gone he'd want a fighter's epitaph. We're going to blast this hellhole back into the sea! Kranz!" she called into the annunciator. "Bring one of the cathode cannon to bear on that mob outside!"

Michaels leaped forward.

"Hold it, Kranz!" he snapped, and turned to his superior. "Wait, Miss Carlyle. They may be alive but unconscious. If you use the cathode cannon, it'll wipe out the plane and everything."

THE girl bit her lip indecisively, almost carried away by her lust for revenge.

"You're right, Mike. Same thing would hold true for the heat-ray, too. Best we could do would be to pick off one every now and then as he stepped back out of line with the plane."

"The paralysis ray?"

"Even worse. It's fatal to humans at very low power. And surely Tommy would have tried the hypo rifle."

"Anaesthetic gas?"

"In this wind? Don't run wild, Mike; you're not thinking straight."

Michaels subsided. After momentary silence, Gerry spoke half to herself.

"A decoy would be useless. Because those devils have completely ignored that twelve-legged nightmare bounc-

ing around out there. From the moment we arrived, they haven't been diverted an instant from their assault on the plane. But if something were to attack them—Michaels! Didn't one of the parties bring in some rotifera at the last minute?"

"You mean those Venusian buzzard-like jiggers that eat everything? Yes, Miss."

"Well, why not let one of 'em loose? It'll finish off those things out there and won't injure the plane."

"An excellent idea, Miss, except that I fear even a rotifer would meet his match out there. Look at that armor plating over their bodies. Those claws. And judging from the plane's appearance, they secrete an acid, too. No, although the rotifer will tackle anything within reason, I'm afraid this job's too much."

"Well, we're going to try it, anyhow."

"Righto. But why not provide for defeat in advance?"

"How so?"

"If those beauties are going to eat the rotifer, instead of vice versa, let's give them a real bellyful. Pump the rotifer full of some poison that won't work immediately on the rotifier itself!"

"Mike, you're marvelous!" Gerry turned to the annunciator. "Kranz! Have you heard what we've been saying? Then hop to it. Rout out all the poisons you can find in the stockroom. And hurry!"

In five minutes Kranz' voice came fearfully over the wire.

"Sorry, Captain. No poisons aboard, no lethal drugs. Just medicines."

For an instant it seemed as if someone were about to suffer the wrath of Gerry Carlyle. But she controlled herself with an effort.

"Of course there's no poison. We catch 'em alive. What use would we have for poisons. But there must be something, something—Medicine! There's gallons of luminal in the store-room. The standard space-sickness remedy. You know what luminal does, Mike? Affects strongly the autonomic nervous system, counteracts adrenin. It destroys emotion. And if emotion is gone, all desire to kill is gone, too! Kranz? You—"

"Coming up, Miss Carlyle," said the annunciator hollowly.

The scheme was quickly put into effect. A huge hypodermic poured charge after charge of luminal into the giant six-foot dough-gray ball. A gangway was thrust out from one of the rear ports, and the rotifer rolled quietly down. Once free, it paused uncertainly with its forest of stout cilia delicately exploring the air for vibrations. Then unerringly the blind devourer, the scavenger of Venus, rumbled straight toward the tumult that marked the wreck of the *Arkette*.

NEVER in all their experience had the crew of the *Ark* seen a jungle battle carried on with such unbridled and appalling ferocity. The rotifer, though plainly functioning subnormally with so much luminal inside it, took the initial advantage by virtue of surprise. There was a sharp clashing as the armored Emotionals were struck by the chitinous lorica of the rotifier, and two of the former vanished into the rotifer's vast gullet.

The ruthless attack forced the Emotionals reluctantly to transfer their fury from the plane to the new enemy. When they did so, the conclusion was foregone. A hundred savage claws knifed into the chinks in the rotifer's armor, ripped him apart in a dozen places. Acid seethed on the chitinous covering; being protein, it turned yellow and began to break down slowly. The rotifier fought like a bulldog, never moving backward an inch, but vicious fangs quickly devoured his exposed soft parts. Shortly all that remained were a few scattered chunks of flesh.

The Emotionals, not relaxing in their fantastic fury an instant, returned to the crumbling plane. But perceptibly now they lost enthusiasm for the job. Presently one of them slumped quietly down in the mess and sat with face utterly blank, devoid of expression. Two or three others wandered aimlessly off into the fog.

Emotion, for the time being, had completely left them; their intelligent counterparts were dead. They had no

brains, no desires, no impulses of any kind. Their existence was a complete blank, save for simple nerve-responses to pain or heat or cold or hunger and the like.

They stared foolishly at the havoc they had wrought, and drifted away without purpose into the fog.

Gerry led the grim party of men from the *Ark*, but before they had covered half the distance the tangled mass of the *Arkette* suddenly shook violently and burst apart. A mighty shout went up as two disheveled figures staggered into view. They were dirty, bloodied where questing claws had found a mark, scorched where acids had seared them—but very much alive. Behind them frolicked a fuzzy gray dunce-rabbit, delirious with joy.

In a devastating rush all the bitterness, the pent-up grief, the self-castigation, the hatred and determination for vengeance, drained away from Gerry's soul and left her weak and gasping with reaction. For one of her rare, brief moments, she was all woman, fragile and fearful and trembling for the man she loved.

"Tommy!" she shrieked, and ran headlong into his arms. Strike's antiseptic helmet, which had protected his face from acid as well as infection, fell apart with the shock. He took every possible advantage of the situation, immediately and competently, while the crew stood around grinning. They quizzed and felicitated Barrows, who explained through chattering teeth that they'd been unable to signal as requested because the control wires had been eaten through with acid.

The years of training reasserted themselves, however. Gerry pulled free and turned on her men.

"Discipline," she remarked frigidly, "must be maintained. You know the rule about leaving the ship during the periodic winds without antiseptic protection. You're all docked two days' pay, including myself. Now get back to the ship at once."

THE crew departed in haste.

"As for you," Gerry scanned Strike in disapproval, "you've disobeyed your captain, broken practically every rule we have by going off on an unauthorized trip, insufficiently equipped, without even a radio. You've disrupted the expedition, thrown us off our schedule, very nearly cost us two lives."

STRIKE nodded.

"I deserve your very best tongue-lashing. Loose the vials of your contumely."

"This is no joking matter, Tommy. Look at that plane. A total loss. Do you think even the London Interplanetary Zoo can afford to throw a few thousand away on every expedition just to convince some young hothead he's wrong? No, indeed. That's coming out of *your* salary."

Strike squirmed. Gerry's clear voice was being heard and enjoyed by the entire crew. She continued with eloquence, cataloguing his sins with devastating point and accuracy.

"And now I want your word of honor that you'll never try a stunt like this again. No more lone-wolfing?"

"All right, Gerry. But don't yell."

"I'm not yelling. Furthermore, you're working for me only. No more contracts with Von Zorn?"

"So you guessed that?" He sighed a bit. "All right; no more divided loyalties."

"And no more—"

Strike glanced at his watch, miraculously still working, and interrupted. "Time's up, Gerry. I've rated this verbal message, and I've taken it like a little gentleman. I've promised everything you want, but now the lecture is over."

"Oh, is it? Tommy, I've just begun to tell you—"

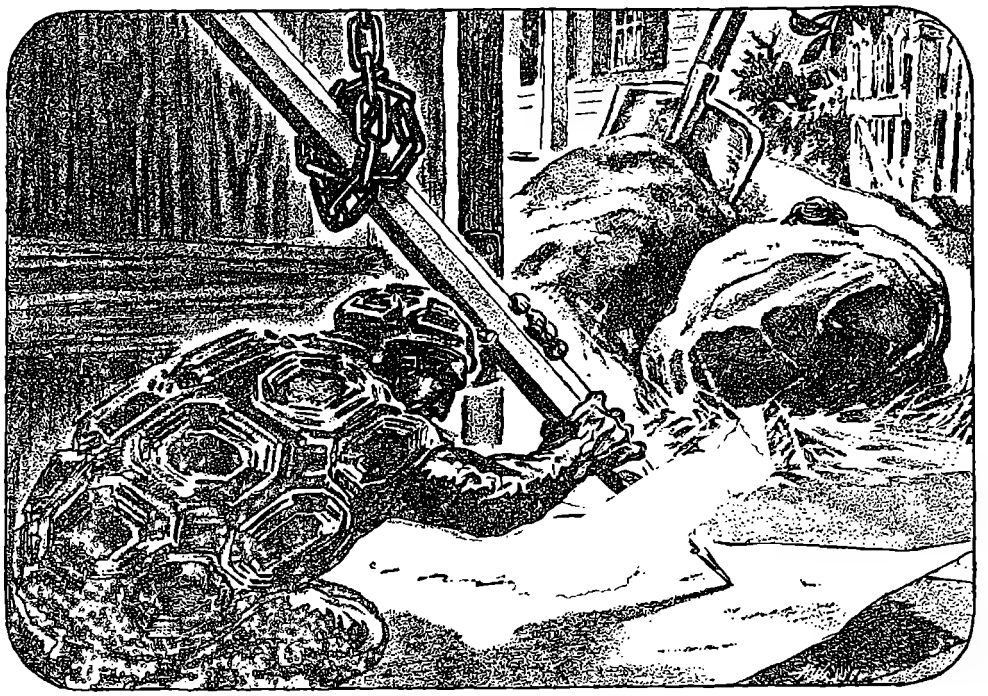
"Oh, no. You've finished telling me, because I'm about to employ the one sure method I know to stop you." He grinned.

"Oh." Gerry was a little breathless. "Oh, dear, you're going to kiss me, aren't you?"

"Exactly."

See-No-Evil mewed plaintively and delicately covered his eyes, one with each paw. Like the rest of his breed, it was about time for him to go crazy, anyhow.

The Last Surviving Member of a Mighty Race Speeds Through the Void on a Strange Quest!



A chain is supporting the pencil.

WINGS ACROSS the COSMOS

By POLTON CROSS

Author of "Chameleon Planet," "Hybrid Space," etc.

MY name is Amos Latham, and I am I hope a reasonably intelligent man. I know nearly all the subjects encompassed in a modern education, but I must admit my knowledge fell far short on the day that I found an object resembling the half shell of a walnut lying at the bottom of a neatly drilled five-foot hole in my best sweet pea bed.

My job? In a way, I'm a farmer. I like to experiment in grafting, pursue if possible hybrid experiments on the lines laid down by Mendel.

I found the walnut on June 7th, 1961, just six days ago. It was a perplexing puzzle in itself to decide how an object so small, unless it were a meteorite, had got to such a depth overnight—but the puzzle deepened when I found that by no means at hand could I begin to budge it!

I began to suspect the thing had some sort of underpart that went down like a shaft into the ground at the bottom of the hole it had burrowed—that

what I saw was only the upper part of some sort of buried spear. That being so, the only thing to do was to clear the sides of the thin shaft and dig the object out.

It took me half a day to make the shaft wide enough to permit me getting down it, but even then I was no better off. I could see clearly enough that the walnut was simply a hemisphere of shell-like substance—but of a vastly incredible weight! I strained and tugged at it until my fingers ached. But I couldn't shift it in the slightest. I just couldn't convince myself that such a fact was true—but it was.

To say my curiosiy was aroused is putting it mildly. I went into the garage and brought out a block and tackle. I erected it on a pretty stout scaffolding tripod and fixed the chain clamp around the inch-square lump. The tripod snapped, but the object didn't budge!

That settled it. Beyond question I'd happened on something that was outside all normal laws, at least in the matter of weight. I remembered something about electrons and protons in contact —neutrons—and went inside the house to telephone Bradley.

BRADLEY is a physicist, in the employ of the Bureau of Standards. He arrived late that afternoon. Bradley, with his usual foresight, had brought along a powerful breakdown truck, complete with crane, trailing behind his car.

I greeted him warmly as he came toward the house, but as he returned the greeting there was doubt in his closely set gray eyes.

"Where is this walnut of yours?" he asked, after we had had a drink.

I took him out to the sweet pea bed, or rather what was left of it after my excavational work.

The thing was still there, and the faint smile vanished from Bradley's face as he tried vainly to shift it.

"Boy, you have got onto something!" he whistled in amazement. "If that stuff belongs on this world I'm clean crazy. Anyway, we'll soon see."

Scrambling back to the top of the small crater he signaled the truckmen. They backed their conveyance clumsily into the garden and watched curiously as they lowered the crane chain. Finally we managed to encompass the walnut in the clamp and gave the pullway order.

A terrific strain was thrown on the chain as it slowly creaked and groaned over the winch. Powerful though the truck's engine was, it took every vestige of it to lift that absurdly tiny thing from the ground. Very slowly it rose up, inch by inch. We saw that the underside was apparently like the rest of it. Brad was watching the thing keenly.

Finally, we had the object deposited on a huge stone block that had once been part of a well at the bottom of the garden. There the task of the astounded truckmen ended. They went off round-eyed and puzzled in a settling haze of dust, leaving us both to our own devices.

Smoking pensively, Bradley studied the object for a while, then turned to me.

"Dense as hell," he said bluntly. "Pretty similar to the stuff that must exist at the core of Earth, though infinitely denser than even that."

I nodded slowly and waited for him to continue.

"That lump came from somewhere out in space," he resumed. "Where, we don't know, but we can hazard a guess —probably from the region of the giant star areas. Specks of substance like this floating around in space probably made up the cores of the very worlds around us—stuff so densely packed that it had an unbelievable weight. It may be a fragment from a sun where matter is densely packed."

"You mean a white dwarf?" I suggested.

He nodded.

"That's it. Take the Companion of Sirius, for example. That is a white dwarf, and Adams at Mount Wilson Observatory proved long ago that the density there is two thousand times greater than that of platinum. Take a matchbox full of the stuff and it would require a derrick to raise it. That's the kind of thing we've got here. That's why it ploughed so deep into the earth when it arrived. Strange it didn't burn up; can't quite figure out that angle."

I PONDERED. Physics isn't entirely in my line; but Brad hadn't finished talking. He studied the object more closely for a while, then went on.

"Come to think of it, this substance might not be from a sun, but from a cooled world. Eddington tells us that heat is not entirely necessary for compressibility of matter. It is not essential to have a temperature of about ten million degrees in order to smash atoms. Terrific pressure alone will suffice.

"The shell of satellite electrons which can be broken by the attacks of X-rays, or the fierce collisions going on in the interior of a star, can also break by the application of continued pressure on a dense world. This produces an almost bare nucleus with the heavier atoms retaining a few of the closest electrons, forming a structure of perhaps one hundredth of a complete atom.

"The consequent compression produces vast weight by comparison with sizes to which we're accustomed. Take the example in physics: in a monatomic gas like helium a thirty-two fold increase in pressure gives an eight fold increase of density, if the heat of compression is retained in the gas. There you have an example of heat pressure—but on a world that is a child of a compressed sun—the Companion of Sirius for example—the very pressure of that world would produce similar, even far greater results. At the very roughest estimate this thing here weighs about one ton to the cubic inch—and that's plenty heavy!"

"And now that it's here what do we do with it?" I asked quietly.

He shrugged.

"Nothing we can do, except give it to the meteorite section of the museum. I'll make arrangements for it to be picked up. It'll be about two weeks, though; I've a special Government job waiting for me."

Talking, we went into the house and had dinner. It was late when Brad finally left with the promise to return in two weeks. Once I'd seen him off I strolled over in the moonlight calm to survey again that uncanny lump.

But it had changed! I got quite a shock as the rays of the amber moon smote now upon a tiny, tortoiselike head. Bent legs, exceptionally powerful, jutted outward from the shell. The legs moved slowly as I went toward the thing, but it stopped on the stone. Perhaps it realized that to fall off would mean another five foot plunge into the ground.

I studied the creature from a distance, observing the viciously curved scar of a mouth. Its resemblance to a tortoise was now quite remarkable. It was smaller, of course, and incredibly heavier!

I shall never know if it was impulse or plain curiosity that prompted me to extend an ingratiating hand toward it. Not knowing what type of intelligence the thing possessed that seemed the only way I could show friendship.

A second later I regretted it. The tiny head shot forward toward my outstretched hand, faster than the striking paw of a cat. Before I knew it the creature's terrible mouth had scissored open and shut. There was a momentary gleam of small, needle-pointed teeth. then I was gazing at a numbed, crimsoned finger from which the top, to the first knuckle, had been completely severed!

FOR a second or two I hardly knew what to think, the shock stunned me. I blundered back into the house, cauterized and bandaged the numbed member. Then, fuming with anger both at the hostility of my visitor and my own stupidity, I sat down to figure the thing out.

I didn't get very far. I couldn't understand how a thing like the walnut had traveled through the void of space and arrived with an impact that had buried it five feet in the ground—yet could live here in an atmosphere of oxygen and hydrogen. Either it was completely adaptable to both space and air, or else it had traveled in some kind of protecting case that had fallen away at the frictional heat of our upper atmosphere.

I meditated once upon killing the infernal thing, but I refrained for two reasons. The bullet would probably glance off such armor-plated density. Secondly, the object was going to interest the scientists. I made up my

mind to call Bradley the next day.

MY sleep was strangely disturbed —physically by the burning pain of returning sensation in my injured finger, and mentally by the memory of the walnut and the realization in my occasional wakeful spells that it was still outside, a densely heavy, vicious-jawed devil.

At times I dreamed, but they were dreams of a quality surely denied to any sane man. I beheld a world of intense darkness lying still and airless under a sky powdered with unfamiliar nebulae and constellations. There was a sense of vast loneliness and incompleteness, of enormous stretches of time occupied by an abstract state that I could only roughly determine as meditation. Meditation? By the walnut? Well, that was how it looked.

As though to substantiate my guess I glimpsed the walnut upon this darkly empty plain, surrounded by the outlines of what dimly appeared to be a city—but a city with no earthly similarity, ruled by machines and yet deserted. In the midst of these perplexing immensities the walnut brooded alone—

Suddenly I was awake, feverishly hot, with a name burning in my brain, the oddest, most astounding name. It sounded like—Yithan Kan.

I screamed it out three times, then suddenly remembered where I was. Dazedly I looked through the window toward the dawn light. That ton weight dark object was still on the block of stone. I shuddered. The memory of that ghastly dream with its terrific sense of weight and loneliness was still seared into my mind.

I felt ill as I got up and dressed. My finger had ceased bleeding but was anything but healthy to look at. It had taken on a curious brittle appearance most unusual for normal coagulation. The finger itself felt curiously different —leaden is the only way to describe it.

I thought once of phoning Doc Shaw to come over. Then, mainly because I detest the fussiness of physicians and because of my complete faith in my own first aid efforts, I let the idea drop. Instead I phoned New York, but to my annoyance Bradley was already in Washington.

It occurred to me with a sudden panicky feeling that for another two weeks I would be alone with this atrocity from an unknown world—unless of course I took the obvious course and left.

I decided against that. Don't ask me why: I can only put it down to the same lure that drives perfectly sane men into absolute danger by the very force of some intangible fascination. I went outside and watched the walnut in the hot morning sunshine. Its capacity for motionlessness amazed me. It did not seem to have budged a thirty-second of an inch since it had been placed there.

Keeping a respectable distance away I decided to call out that absurd name.

"Yithan Kan! Yithan Kan," I shouted, "can you hear me? Can you understand me?"

The beady eyes, like microscopic garnets, studied me unwaveringly, and I returned the stare like a man hypnotized by a snake. That very act did something to me. I could feel a groping and plucking at the neurones and receptive cells of my brain.

THAT which followed was not exactly an exchange of communications—in fact I do not believe my brain was developed enough to pass any coherent thought. It was more a series of mental images from which I gathered that this weird object, on arrival, had been stunned by the terrific impact. Only its super hardness and density had saved its life.

It was, as I had guessed, perfectly adaptable to any conditions. Its natural environment was one of intense cold—interstellar cold. Here on Earth it had apparently adapted itself immediately to the drastic change in conditions. I have heard of plants with such amazing adaptability, but the idea of an intelligent organism with similar abilities was unbelievable. Much to my surprise I learned that Yithan Kan was the female of its species.

So much I gathered on that first communication, then the spell was broken by some slight sound made by the wind.

Disturbed in both mind and body I went into the house and tried to figure out what I ought to do, particularly how to improve my physical condition. I felt bone weary, and for no apparent reason.

It occurred to me that I might have been poisoned by the bite, but a second examination of my injured finger and a study of a droplet of blood through my microscope revealed no such signs. I wasn't poisoned; it was something else that had gripped me—something subtly different.

Several times I wondered if I ought to feed the walnut, then decided it didn't seem necessary. From what I could gather it absorbed energy directly—probably from the shorter cosmic rays which abound freely in space and also to a good extent on Earth.

With the passage of time my conviction of illness increased. From my injured finger the leaden sensation had traveled the entire length of my arm, changing it from normal color to a stone gray hue. I began to become really alarmed.

As I prepared lunch, though I did it more from force of habit than because I was hungry, I received another shock. I'd decided on canned beans to go with some cold meat, and in the most natural fashion possible I grabbed the tin with my injured hand to pull it from the shelf.

The can felt like pulp in my grasp—I found myself staring in amazement as juice and squashed beans spurted from the cracks in the tin, so tightly had I gripped it! I doubt if a hammer could have flattened it more effectively. I dropped the battered can in stupified horror, then looked at my hand. It wasn't scarred or cut by the can's sharp edges—only weighted, almost without feeling, horribly numb. I flexed my fingers that I could hardly feel — all save the injured one which wouldn't move at all.

I forgot all about a meal; the complexity of this new happening forced me to start pacing around, trying to figure out what had occurred.

FROM a sense of horror I graduated by easy stages to one of interest, even triumph. I spent some time testing my strength on the hardest things I could find, felt a certain joy in discovering that most metals would bend easily in my one-handed grip, that even small stones crushed into powder as though cramped in a vise.

Of course, I knew that the walnut was at the bottom of it. But how had this thing come about? Had the bite it had given me started some condition of matter such as could only exist on the unknown, unimaginably heavy world from which the creature had come? What was the explanation?

Man, clearly, is what the scientists vaguely call a "fortuitous concourse of atoms in the shape of a man," a concourse that has the mystic power of thinking. He is in effect a very definite movable knot of energy condensed into a visible form. In the beginning of time some cosmic radiation changed a free energy state into a definite material build-up called protoplasm, and after the intermediate stages it became Man.

Somewhere, the enigmatic occurrence of mutations had come about—the definite change from one species into another effected by — Just what? Science is still hazy on that. Maybe radiations once again—unseen, undetectable, operating upon material structures at certain intervals of time.

These radiations have produced through the ages a change so enormous as to elevate protoplasm into living man. Nothing has been destroyed because nothing in the universe *can* be destroyed: only change is possible. Unseen forces altered atoms into a new concourse, formed a new pattern, and ultimately built them into the shape of Man.

But if this entity possessed—as was highly probable—many of these spatial radiations as part of its natural make-up, it was also possible that in the fashion of radium's hideously destructive emanations, a good deal of radiation had entered my body at the moment of that finger severance. And, since this creature was infinitely more powerful than I, representing a far mightier state of condensed matter, it would be possible to bend me entirely to its own matter state just as a strong will can

overpower a weak one.

In that case the atoms and electrons of my body were even now undergoing a change! Pressures and radiations, operating on an infinitely small scale, were at work within me, changing my whole natural formation into a new condition of matter!

My strength! The dead weight increasing in my arm! The crawling numbness creeping around my shoulders and neck!

"God!" I cried hoarsely, leaping up as the searing truth struck home to me. "God—" I brought my hand down bitterly on the table with the intensity of my thoughts. The tabletop splintered as though split with an ax.

I scarcely heeded it. I had become accustomed by now to the frightful power of that left arm. With every hour it was growing heavier, tauter, more unwieldy—yet as the same conviction of strain passed around my shoulders I began to feel an awareness of new balance. I felt less one-sided. It could only mean that my new weight was distributing itself equally by slow degrees.

STRUCK with a sudden thought I hunted up a tape line and, standing flat against a wall, measured myself. I felt a queer sensation at my heart when I discovered I was two inches shorter in height! Then a compressing, contracting effect was in force! My mass was becoming smaller and denser. . .

Frightened, I went outside and tried to communicate with the walnut, but my brain emanations were useless. Nor did the thing attempt to communicate with me, though it watched me with motionless intentness.

But the reason for it all? That was what I could not understand. That bite had been deliberate; the walnut had purposely impregnated me, but to what purpose? Sheer malice? No: an intelligence so profound would not stoop to so earthly a thing as malice. There was another reason — perhaps it lay somewhere in the realms of those weird, disturbing dreams I had had.

And still no thought of leaving entered my head, or if it did I refused to heed it. I believe the creature itself was responsible for that, holding me by some indefinable shackle of will power, forcing me onward into a state I could only guess at, but which savored with every passing hour of a place unworldly, lying across inconceivable distances.

Quite suddenly, toward evening, the sickly feeling that had persisted with me all day passed off. I became ravenously hungry. I had an appetite that would have done credit to a lumberjack.

In the space of an hour I had emptied my small but well stocked refrigerator, but even then I only felt vaguely satisfied. I knew that it would not be long before I would have to eat again.

Energy, of course—strange, mysterious changes within me that demanded a sudden terrific influx of supply to keep pace with my rate of increasing strength. Very similar, I decided, to the tautness of a spring governing the exact amount of potential energy it must possess.

By the time I went to bed—after a final dubious look at the motionless walnut in the rising moonlight—I was feeling very top heavy indeed. The effect seemed to be working downward from my arms and shoulder—for my other arm was now likewise affected to the lower extremities.

The bed creaked noisily as I lay upon it. I was asleep almost immediately and once again strange, incredible dreams penetrated my mind. But this time my brain was much clearer, remarkably sharpened. I saw the things that were offered to me by some kind of extra sensory reception. Records of a strange race buried in a long-lost antiquity on a world of huge weight, were laid bare before me.

I saw again that dark, unfriendly airless world with its vaulted dome of unfamiliar stars. This time I saw others of the Walnut race—spawning thousands. Through flickering, kaleidoscopic flashes I watched a strange disease, apparently an unfavorable radiation from outer space, attack one after another of the beings, wipe them out with the efficiency that lethal gas kills a man.

I realized more clearly than ever that these beings did sustain themselves by radiations. To them, a sudden influx of abnormal radiation was a perfect cosmic Black Plague, absolutely fatal in effect. I saw the death of thousands upon thousands of the creatures until there could not have been more than five remaining.

HERE the disease stopped, but four of the five died slowly from after-effects, leaving only one—Yithan Kan!

One, a female of the species, surrounded by the glory of a magnificently intelligent race's discoveries, yet unable alone to do anything with them. Unable to mate, unable to perpetuate the superb science of her species.

She seemed to meditate over the perplexity of this problem for years. I saw her study machines that had no earthly meaning. Telescopes of surpassing power revealed to her the unraveled depths of the cosmos on polished mirrors of floating mercury. The dead worlds of Sirius, the half-formed worlds of Arcturus, the rich but lifeless worlds whirling around vast Antares and Betelgeuse—these she studied, without avail.

Then the instruments' powers reached out across immeasurable light years to the regions of the dwarf G-type suns, to the Solar System. Mercury, Venus, Mars, and the outer planets were mirrored perfectly in the instruments, but Yithan Kan found no traces of life in any of them. That seemed to be the treasured possession of the third world alone.

Yithan Kan seemed to come to a decision. Her head and legs folded inside her shell-like body. She generated gravity neutralization as simply as a spider spins its web, and hurtled bullet-like into the swirling, dusty emptinesses overhead.

I awoke suddenly with visions of galaxies, suns and planets whirling before my vision. It was morning, and I was no longer in bed. No! The bed had collapsed under my weight in the night, precipitating me onto a floor that was showing signs of cracking.

My heaviness now was a terrific burden. During the night I had changed incredibly, was literally half my previous size with an energy and strength beyond belief.

Hunger, terror, wonderment—these three things battled in my mind as I lumbered creakingly across the cracking floor. I gained the doorway safely enough, but I fell through the staircase and landed in the kitchen below! I wasn't hurt. No indeed! Where I had struck myself against the woodwork it had splintered and left my hardened, stone-gray flesh untouched!

I went into the yard, strangled a dozen chickens one after the other and ate them raw. I was no longer Amos Latham; I was something metamorphosing into an unknown state for an equally unknown purpose. I knew now how Yithan Kan had come to Earth, but the *why* still defeated me.

I knew, too, that if she wanted she could easily get off that stone block without dropping to the ground. Her natural power of gravity neutralization would accomplish that. Only when she had been unconscious from her great fall had she weighed her normal ton to the cubic inch.

Her wine-red little eyes watched me as I ravenously ate the fowls. I didn't try to communicate: I had all my work cut out to master my own movements and control my will power. Going back into the house I thought of the idea of recording my experiences, and up to now I think I have managed to maintain a certain coherency.

It is not easy to write this because I have to have my hand fastened to a rope slung to a beam in the garage roof so that the weight of my arm and hand does not interfere with writing. If this writing is thick and heavy it is because I am constantly wearing down the pencil point, frequently breaking the pencils themselves. The very lightest of pressure suffices.

I feel now that I may revert to the present tense because I have caught up with my experiences to date. There is nothing for me now but to state events as they happen, and I have the oddest conception that they will happen soon.

I HAVE been resting. At least I call it that for want of a better

term. In truth, it was more a comatose condition occasioned, I think, by exhaustion. The vast change in my make-up, the enigmatic forcing together of electronic spaces by unconjecturable radiations, the consequent denser packing of materials by scientific powers that I can hardly guess at, tires me with amazing rapidity. But during that sleep, if sleep it was, I dreamed again.

Yithan Kan is more than a mere scientist. She has the knowledge of a brilliant race at her command. The forces of light, space, gravitation and pressure are solved riddles to her mind. I have learned that my earlier hypothesis—that a matter formation can be altered by radiation into what is possibly a new and unthought of state—is correct. By radiations from her own body she has mastered mine, literally is bending its formation to conform with her wishes.

I have eaten again, and now I feel that that huge hunger is abating, maybe by the establishment of some new level of change. I am smaller, infinitely smaller, yet the mass of my body is infinitely increased, compressed to an unbelievable weight.

I no longer dare to go inside the house. Floors and furniture splinter under my weight. I have substituted a chain for a rope to support the pencil, but live in fear that the beam, a foot thick though it is, will smash in two if I do not stop writing. Yet I must go on.

I think I have been unconscious again—it seems to me that days have drifted by. Perhaps it is a good thing I am so far from town; people rarely pass around here. With my last awakening I became conscious of a new sense, which still persists.

I can sense the inflow of cosmic radiations such as are quite undetectable to normal human beings. They give me life, strength, an abounding energy that is both glorious and yet oddly terrifying.

Around me is a world of giantism. The garage seems to me like a vast hall; this very pencil is far bigger than I. I am forced to work it like a lever—but now it is simpler because I have taken on a neutralizing power. The radiations I absorb from space I can convert within myself to neutralizing uses.

You wonder? Why should you? A plant breaks down nitrogen: a human being inhales oxygen and hydrogen and exhales, by the use of inner chemistry, carbon dioxide. Is it so wonderful that I absorb energies and transmit them in their most needed form—for the nullification of weight? No, it is not so impossible but—I forget! I am no longer human, therefore I no longer think properly along human lines.

Do not ask me to explain the full state of my metamorphosis; I have tried to do that already, to tell by the stages through which it happened how Yithan Kan reassembled my bodily atom so completely as to give me a body no more than an inch in diameter, yet weighing very nearly a ton, without neutralization.

ALL this she has accomplished without causing death, as easily indeed as in my own experiments I have grafted cuttings from one tree onto another without killing either. Organic life is truly indeed simply an arrangement—in the higher states—of living, thinking matter which, by a mind clever enough, can be altered into a new and entirely unpredictable state.

From this doorway I can see Yithan Kan very clearly. She is as big as I, high atop a mighty block of stone—a stone that was only an ordinary block on the day she was first put there. I am like a microscopic tortoise, hardly visible. I am no longer an Earth being, for I am not breathing—only absorbing radiations. The entity of Amos Latham has gone and instead I am— *What?*

At last I grasp the purpose of Yithan Kan's visit. I can feel her mental radiations coming to me, and with those radiations the faint leftover human traces of my mind evince a certain admiration for the nobility, the relentless purpose, of her aim.

For the perpetuation of her race and science she needs a mate—a male. I am still a male. She metamorphosed me into a being identical with herself save in the matter of sex—as easily as

a sculptor can model a piece of clay into a woman and then into a dog without changing the clay. He merely reforms the atoms and molecules of the clay into a new shape.

And what does he use for his tools? Basically, force! In like manner, but fully understanding the absolute nature of the force *behind* force, Yithan Kan has remoulded me.

She needs me . . and I need her! I know I do. I feel it. She is compelling to me now—fascinating. Our children on that far distant world beyond Sirius will carry on the heritage of a race entirely eliminated excepted for this indomitable one—Yithan Kan. Afterward, the nucleus of a new race, a reaching upward toward achievement.

I must go to Yithan Kan. Earth no longer holds me At will I can, and shall, leave it behind—wing across the cosmos with Yithan Kan to her distant planet.

I shall go. I must go. Now!

FORECAST for the NEXT ISSUE

NEXT month's feature novelet is by a writer new to science fiction—FREDERIC ARNOLD KUMMER, Jr., son of the great novelist. His story, THE EXTERMINATORS, is a powerful drama of one Earthman outwitting a band of unknown interstellar raiders. Neptune, Saturn, Uranus, the satellites of Jupiter, had all been wiped clean of mankind by the Exterminators. Teeming colonial cities had been blotted out in a few hours. Mighty fortresses were turned into vast mausoleums almost instantly. . . Space ships, patrol cruisers, freighters and great liners had been swept of human life and allowed to drift on through space, carrying their cargoes of dead out into the void.

When a lone terrestrial explorer pits scientific strategy against these mystery invaders, the result is the most stirring climax science fiction has offered for a long time.

* * *

Tommy Quade, ace special photography man for Nine Planets Films, Inc., gets into plenty of hot water when his chiefs want him to shoot the new super-special, DOOM WORLD. In the next issue, HENRY KUTTNER brings you back to Hollywood on the Moon and the Silver Spacesuit with his latest novelet, DOOM WORLD. It's a thrill-a-minute story of the ultra-modern movie-makers.

* * *

ARTHUR L. ZAGAT, who gave us such fine stories as "The Lanson Screen" and "The Land Where Time Stood Still," returns to the pages of THRILLING WONDER STORIES in the August number with a novelet of the Twenty-first Century, THE GREEN RAY. It's an exciting story of scientific wizardry striving to protect mankind's greatest secret.

* * *

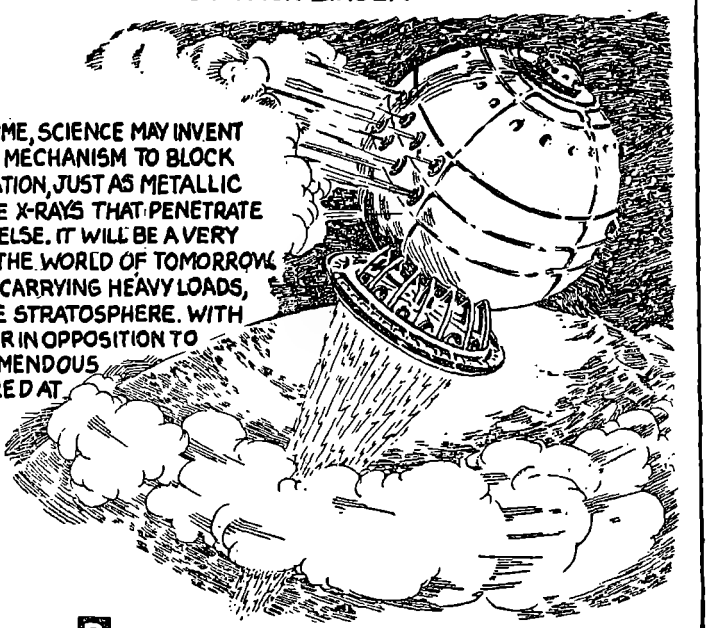
Continuing our series of special articles by the foremost scientific authorities in the world, next month's issue of T.W.S. presents THE NATURE OF THINGS, by SIR WILLIAM BRAGG. It's a highly instructive article of phenomena in the field of physics, profusely illustrated.

* * *

Next month's issue of THRILLING WONDER STORIES also brings you other novelettes and short stories, plus another edition of our brand-new feature, SCIENCE QUIZ, and our regular star parade of features and departments.

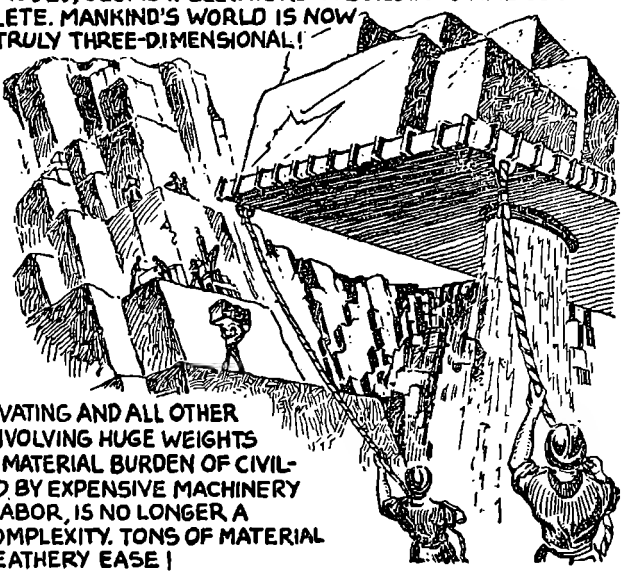
IF — SCIENCE CONQUERS GRAVITY!

BY JACK BINDER



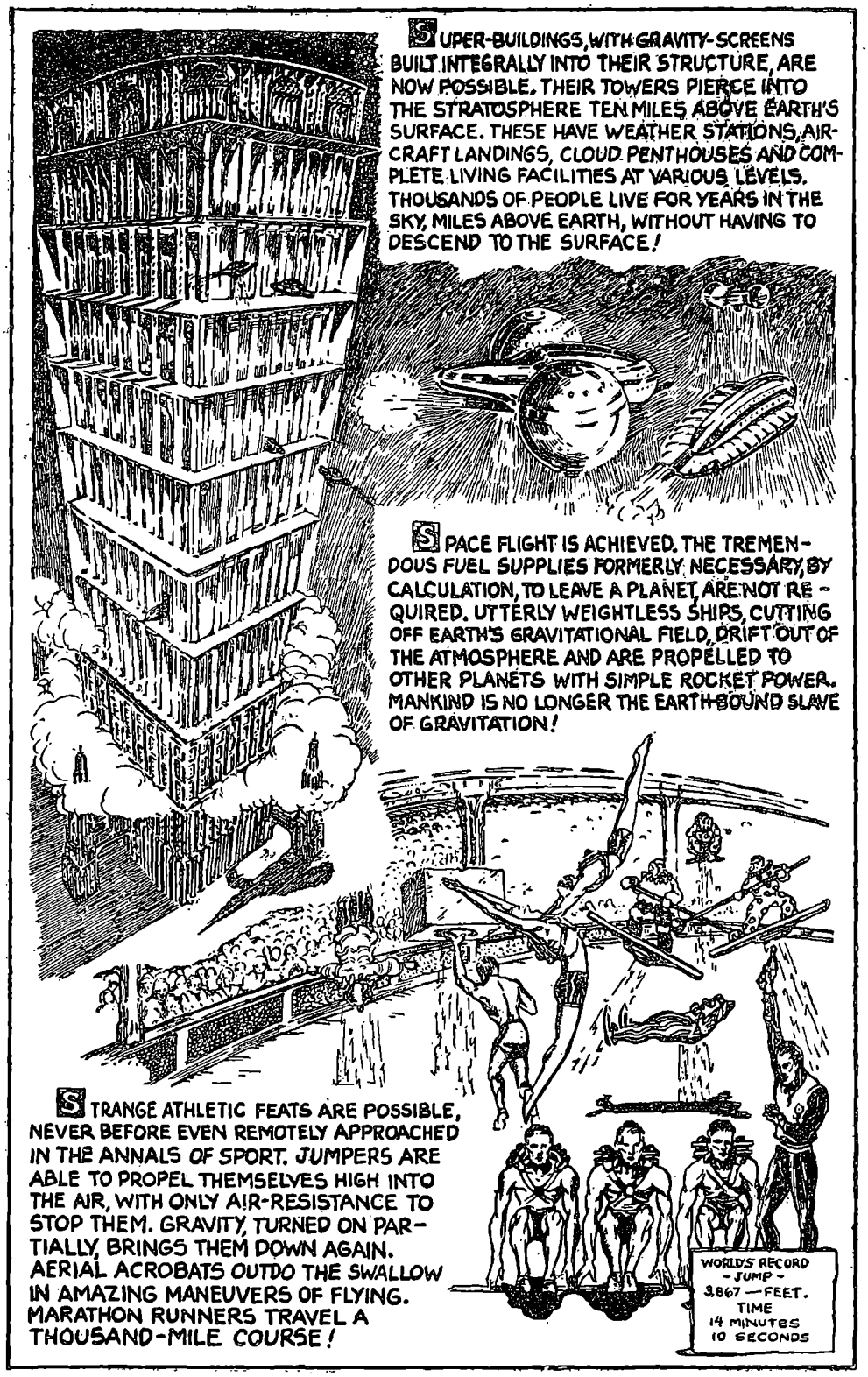
IN SOME FUTURE TIME, SCIENCE MAY INVENT A "GRAVITY SCREEN"—A MECHANISM TO BLOCK THE FORCE OF GRAVITATION, JUST AS METALLIC LEAD SCREENS OFF THE X-RAYS THAT PENETRATE ALMOST EVERYTHING ELSE. IT WILL BE A VERY USEFUL INVENTION IN THE WORLD OF TOMORROW. WEIGHTLESS AIRCRAFT, CARRYING HEAVY LOADS, ARE SUSPENDED IN THE STRATOSPHERE. WITH SIMPLE ROCKET POWER IN OPPOSITION TO EARTH'S ROTATION, TREMENDOUS DISTANCES ARE COVERED AT THE SPEED OF 1,000 MILES AN HOUR!

RELIEVED OF THE AGE-OLD BURDEN OF PHYSICAL WEIGHT, PEOPLE FLY THROUGH THE AIR LIKE BIRDS, WITH SMALL AIR-SCREW MOTORS TO OVERCOME INERTIA. TRAVEL ON THE GROUND, BY AUTO AND TRAIN, IS OUT-MODED, CLUMSY. ELEVATORS IN BUILDINGS ARE OBSOLETE. MANKIND'S WORLD IS NOW TRULY THREE-DIMENSIONAL!



QUARRYING, MINING, EXCAVATING AND ALL OTHER LARGE-SCALE OPERATIONS INVOLVING HUGE WEIGHTS ARE VASTLY SIMPLIFIED. THE MATERIAL BURDEN OF CIVILIZATION, FORMERLY HANDLED BY EXPENSIVE MACHINERY OR BACK-BREAKING HUMAN LABOR, IS NO LONGER A PROBLEM OF INCREASING COMPLEXITY. TONS OF MATERIAL ARE TRANSPORTED WITH FEATHERY EASE!

Featured in the Next Issue:


SUPER-BUILDINGS, WITH GRAVITY-SCREENS BUILT INTEGRALLY INTO THEIR STRUCTURE, ARE NOW POSSIBLE. THEIR TOWERS PIERCE INTO THE STRATOSPHERE TEN MILES ABOVE EARTH'S SURFACE. THESE HAVE WEATHER STATIONS, AIR-CRAFT LANDINGS, CLOUD PENTHOUSES AND COMPLETE LIVING FACILITIES AT VARIOUS LEVELS. THOUSANDS OF PEOPLE LIVE FOR YEARS IN THE SKY, MILES ABOVE EARTH, WITHOUT HAVING TO DESCEND TO THE SURFACE!
SPACE FLIGHT IS ACHIEVED. THE TREMENDOUS FUEL SUPPLIES FORMERLY NECESSARY, BY CALCULATION, TO LEAVE A PLANET, ARE NOT REQUIRED. UTTERLY WEIGHTLESS SHIPS, CUTTING OFF EARTH'S GRAVITATIONAL FIELD, DRIFT OUT OF THE ATMOSPHERE AND ARE PROPELLED TO OTHER PLANETS WITH SIMPLE ROCKET POWER. MANKIND IS NO LONGER THE EARTH-BOUND SLAVE OF GRAVITATION!
STRANGE ATHLETIC FEATS ARE POSSIBLE, NEVER BEFORE EVEN REMOTELY APPROACHED IN THE ANNALS OF SPORT. JUMPERS ARE ABLE TO PROPEL THEMSELVES HIGH INTO THE AIR, WITH ONLY AIR-RESISTANCE TO STOP THEM. GRAVITY, TURNED ON PARTIALLY, BRINGS THEM DOWN AGAIN. AERIAL ACROBATS OUTDO THE SWALLOW IN AMAZING MANEUVERS OF FLYING. MARATHON RUNNERS TRAVEL A THOUSAND-MILE COURSE!
WORLD'S RECORD - JUMP - 3,867 — FEET. TIME 14 MINUTES 10 SECONDS

IF MAN MASTERED TELEPATHY

THE YEAR OF UNREASON

Then she screamed, a piercing cry of utter horror

Fifteen Mighty Space Ships Plunge Into the Void When the Skies Rain Blood and a Malignant Cosmic Entity Imperils the Earth!

By J. HARVEY HAGGARD

Author of "Faster Than Light," "Human Machines," etc.

CAPTAIN Colin Hershel stopped shaving when he saw the two blue spacegram rectangles lying upon a neatly folded metal-mesh uniform. One was an official message to report to his superiors. The other read:

Hershel: I am tired of saying "Yes, sir," and "Very well, sir," to you. I am going away, and taking Nyda with me. If I ever meet you again it will be as man to man.
Quentin Lor.

Colin Hershel glanced at the wrist chronometer lying on the shaving stand, grimaced. Then he began to laugh, but the laughter was harsh and without humor. Reaching down, he took the picture of a girl from its frame and tore it across without looking at it.

"Well, I guess you've made a choice, Nyda," he said hoarsely, bowing in mock salute.

Ten minutes later he was saluting Major Sward, of the research division

of Space Defenses.

"You're Captain Colin Hershel?" queried the major, a stocky man in his yellowish laboratory garb. He wore the insignia of Federated Earth on his collar, and looked completely exhausted. "Then you're the one who's been conducting those experiments with Quentin Lor. I can't seem to find him anywhere, so we sent—"

"Major!" ejaculated Colin Hershel. "I had nothing to do with that research! I know nothing of Lor's experiments. I am his superior in rank, and I suppose he inferred that I had given him permission—" Major Sward's eyes had narrowed and his mouth became tight, and Hershel broke off.

"We want a report on that red germ spore, Hershel," the major said stiffly. "We're not interested in your personal differences with Lor—if that is why you are now disclaiming knowledge of his work. This is a crisis, Hershel. There is danger to your mother planet. We want a report on that rojo-spore, Hershel!"

And with that, Major Sward turned on his heel and stalked from the room. Colin Hershel clenched his fists, his brow knit in a worried frown.

"Unreasonable!" he muttered. "Damned unreasonable!"

Small wonder the past twelve months had been called the Year of Unreason, when men had been taught to think of matter and space as certain quantities to be subdivided and catalogued, when even Time had become a known factor among simple equations which had resulted and were resulting in the creation of the Universe.

It was a beautiful cosmos that man had built about him, with gleaming girders made of his knowledge, and a foundation of most indisputable computations. A beautiful cosmos, reflected Colin Hershel, but it was all tumbling down, now, around man's ears, like a house of cards.

They might better have called it the Year of Chaos.

SANE men had suddenly begun to do strange, inexplicable things. A wave of suicides had swept Earth. Europe was dominated by a barbaric conqueror, in a crushing advance from the dark shores of Africa. Terrestrial governments tottered. Whitish clotted masses came floating out of the ether from space. Hunger and Pestilence marched side by side. A maleficent mental influence was at work.

A sinister suggestion of what was to come had been ushered in with a rather spectacular report. A giant stone countenance, carved in the side of a mountain in the Adirondacks, was observed to gush great streams of blood from its mouth and nostrils. Various "rains of blood" were reported in various sections of the globe. By that time it was known that the crimson flood was no "rain of blood", but a simple migration of seed-spores, carried in from outer space. The tiny rojo-spores looked like blood as carried by gusts of wind.

Then, seven months back, two space ships were found near Iapetus, one hundred gravity cuttle-borers of the Earth's battle armada, gutted of life from stem to stern and manned by gaping white skeletons.

Yet this startling news had scarcely flashed across the televisors when news came that Venus had fallen prey to a strange invasion, that the entire planet had been sucked dry of animal and vegetable life. Other ships were found then, floundering about the void without guidance.

Neptune, then Jupiter's habitable moons, were the next to go. Wireless communication through interplanetary space ceased, to be superseded by a solitary emission of insane static. And the menace, hitherto inscrutable, had been visualized as frantic messages for help rang across the ether and men screamed last words which were to paint a picture that was almost beyond reckoning.

Something was striking from the vacuum of space, something that contradicted all laws that govern matter; reason itself must give way before the unreasonable. Earth's telescopes were trained upon gigantic blotches of whitish mass, which came floating across the ether, seemingly possessed of an amoebic mode of propulsion.

The whitish blotches clung about the

ravished planets in great clumps and clusters. Swarms of them floated across the airless space between the planets, sometimes blotting out the rays of the sun, sending forth pseudopodic tentacles in a greedy search for flecks which might be fleeing space ships. Glassite space-sheathings melted before the acidulous clutch of amorphous death, and purling clots of matter closed down to exterminate the life of the Universe in a merciless, sweeping advance.

"I suppose you can read the charts," remarked Major Sward with some sarcasm, as he returned and placed a sheaf of diagrams before Colin Hershel.

The space captain glanced belligerently at the papers, then tossed them upon a desk.

"And you've got some idea of what the invaders look like?" he asked.

"Some idea!" snorted Captain Hershel, the muscles knotting in his angular cheeks. "I saw them, man! I was on a two hundred grav wardog, wallowing near Mercury." His lean hands convulsed on the ray weapons holstered at his waist. He closed his eyes an instant, and stood swaying.

"I ordered a return to Earth at once," he said finally. "I have never seen anything like it."

"Why?" demanded Major Sward, edging nearer. "Do you know what we're dealing with? Do these things have intelligence?"

CAPTAIN Hershel turned suddenly, his face flushed with wrath.

"Listen here!" he snapped. "I'm tired of your damned pestering! All right—I know what Quentin Lor was working for. But that rojo-spore development was a wrong angle. Maybe there is some connection between that rain of 'blood' and the monstrous white clusters that are purging other planets of life! Maybe there is! But it hasn't helped us in fighting them!

"Do you realize just what Quentin Lor suspected those amoebic masses of being? Do you know why he's cleared out now, like a yellow dog with its tail between its legs? He knows we're licked. He knows that the Earth planet is a goner, too. When those white monsters get through here, this will be a skeleton World, clustered over with slime—and no life! There's no way to fight those things, Major Sward, and Quentin Lor *knew* it!"

"Wait a minute!" ejaculated Major Sward. "I know you've been under a terrific strain, Captain Hershel. But you're still holding something back. Just what are these invaders from space?"

Yes, he was under a strain! Even as he stood there those monstrous aggregations were floating in from space, coming nearer and nearer. . . It wouldn't do to think of Nyda and Quentin Lor, running away in a speeding space ship, now. He had to divorce his mind of anything personal, be ready to fight with the arrayed remnants of the armada of terrestrial space vessels, when those monstrous invaders reached Earth.

"Listen, Sward," he said savagely, dropping the man's official title. "Those things haven't intelligences. They are moved by instinct. There was one thing Quentin Lor knew, that we didn't know.

"This Earth is a mote, a tiny particle in a cosmos mightier than our imagination. There are living beings in that super-world, and our Universe is in the *inside* of some colossal living being! Our ether flow is a tiny rivulet in that monstrous being that surrounds us. Quentin Lor knew that! He realized it all the time!

"The ether flow, with its Universes and galaxies, is the blood stream of that monstrous creation. The planets and suns are corpuscles in the blood stream, bearing their matter down the etheric flow to some remote part of the monster. And we human beings—you know what we are?"

The fat face of the major was like putty. His mouth was a sagging slit. Horror was in his eyes. He gasped, licked his lips, seemed too stunned to speak.

"Then I'll tell you!" exploded Captain Colin Hershel. "You can tell it to the world if you want to, and change all men to raving lunatics. If Earth is a corpuscle in the blood stream of a colossal monster that encompasses all

space, then man is a microbe—a disease bacteria, infesting the corpuscles!"

"Wait a minute!" whispered Major Sward. "I'm beginning to grasp it. But it's vast, almost too vast to comprehend. And the invaders are—"

"White corpuscles!" answered Herschel with a bitter laugh. "White corpuscles sent along the blood stream to purge the blood of disease microbes. That's why we're doomed, sir, doomed to die fighting against those monstrous purling masses that are floating in from space. They are the cleansing leucocytes of this colossal beast of space! We humans are the disease microbes they are to wipe out!"

* * * *

NYDA MOBERT had the delicate olive complexion of the terrestrial girl of 2050. Many racial strains flowed through her lithe figure, and many mingled traits had conspired to bestow upon her a haunting beauty.

She stood before a many-angled mirror, her bare shoulders gleaming through the crumpled vitrisheen negligee, her lustrous brown hair in disarray. Her boudoir was like the hollowed inside of an oval, with the bed and vanity furnishings reposing in apertures shelved within the curved berylumin walls.

At a slight sound, she turned. A man had entered the room, stood smiling at her. His dark, scarred face was alight with an odd intensity. Ray-burns from scientific apparatus lent a ghastly hue to Quentin Lor's face.

"Quentin!" she exclaimed.

"Nyda," muttered the man, his eyes devouring her with a burning glare. "I know I should not have come here. But—" His eyes swept the ovoid contours of the room, the disheveled bed from which she had evidently just arisen.

"Something's happened!" she exclaimed with a gasp of dismay. "Something's happened—to Colin!"

A muscle tweaked near the corner of Quentin Lor's mouth. His gaze became stony, impassive.

"No," he answered. "Nothing's happened to Colin."

"Then you've succeeded?" She whispered the words hopefully, but found no response in his downcast eyes. When he said nothing her eyes widened slowly with chilling apprehension.

"Quentin—" she began questioningly, and he nodded. His eyes were cast with adamantine hardness, now.

"I've failed," he admitted. "Completely. Utterly. I had hoped that the rojo-spores might develop some clue. I can get them to a certain state, but their cycle depends upon some supply of nourishment other than laboratory fluids. There's nothing more I can do. We have only time left for one thing."

Nyda frowned. There was a great change in Quentin Lor. Something strange had come over him the last few hours. She attempted to draw away from his hands, now, but his grip tightened. A thrill of fear swept her. Frightened, she became indignant.

"To eat, drink and be merry," she exclaimed. "For drunkenness and carousals. Is that what you mean?"

"No, Nyda," he said swiftly. "I mean flight. We have time to escape, Nyda. I have a speed-type L-ship, fueled and stocked with provisions. We can flee, away from this Universe, to some other habitable planet somewhere in the cosmos. There must be some tiny world overlooked by those advancing corpusles."

"And what of Captain Herschel?" demanded Nyda, face flushed, eyes bright.

Again Quentin Lor shrugged. "Tradition will keep him here," he answered softly, his eyes flaring with pent-up emotions. "He would refuse to come, you know that, Nyda. He would prefer to die fighting for a hopeless cause. You can be happy with me, Nyda. Together we shall find a new world!"

HE was talking fast, now, for her contempt was only too evident in the aquamarine eyes.

"I too have traditions," she began stonily. Then she was struggling in his arms as he grabbed her, tried to press his feverish lips upon her own. This Quentin Lor was not the man she had once respected, liked—that man who had labored incessantly in his laboratory, seeking some way to aid a cornered world! He was a savage husk

of a defeated man. Primal passions that had always been held in check were now in dominant play.

She wrenched away from him, fled through the doorway, down toward the laboratory where she had served as Lor's assistant during his experiments. She heard his rapid footsteps, his incoherent shouting, as he pursued. She paused in the doorway of the laboratory.

Suddenly she screamed, a piercing cry of utter horror. For over the coiling tubes of apparatus hung a fearful apparition. It floated there, like a questing beast of prey. It was about three yards in diameter, of a rough cucumber-shape, a phosphorescent splotch that pulsated with inner crimson hues and emitted a greenish corona. Hairy protuberances jutted from a seething orifice. It suddenly moved, fast, came to a stop above the girl in the doorway.

There came the sharp explosion of a zelnx-ray hand-gun, a splinter of striated purple, needling across the air. The oblong creation above Nyda's head suddenly dispersed, melting into a cloud of red spores that dripped downward through the air, looking like blood.

Nyda turned. Quentin Lor stood in the doorway behind her, a zelnx-ray gun held in his hand.

"Nothing to fear," he said harshly. "That's the highest stage of the rojo-spore growth. It lies in the vat, then floats up, and subdivides into multiple spore cells again. I can't get it beyond that stage. That's why I'm licked. You shouldn't have feared that, Nyda. But this—" He motioned her toward the doorway with the needle projector of the weapon. His eyes were bestial, now, and there was something inhuman in his demeanor.

For a moment she hesitated. Then she walked past him, in the direction he had indicated.

* * *

FIELD lights ringed in the tarmac and the barracks of the Terrestrial Guard, looming beyond, was checkerboarded with inner illumination that was clouded crimson at times. But the blackness of interstellar night overhead remained the same.

Captain Colin Hershel stood at one end of the field, his big figure muffled in a vitrisheen slicker. He cursed as gusts of wind brought the carmine spores in a continuous rain, piling little bloody wrinkles over his shoulders and storm helmet. Sometimes the rojo-spores clotted out the field lights, hid the rows of berylumin spaceships that lay there with barbed metal guard plates jutting into the glow, ready to take off into the blackness. At other times he had to cover his nostrils with his fingers to keep the suffocating little cells from stuffing up his lungs.

He stood in the crimson rain of spores, looking steadily upward through a powerful telescope, which had to be wiped off occasionally. When its upper lens was clean there was no night up there in the stars where its vision penetrated.

He saw a great cucumber-shaped fleck, red as blood, as it floated by overhead. Several others followed. As they passed overhead there came an inevitable thickening of the rain of red-spore spawn.

From the direction of the barracks a hulking figure loomed. It stopped before Hershel and saluted. He made out the rugged features of Lieutenant Rusk. Good old Rusk! There were not many things that could strike fear into his unimaginative brain.

"Everything in order, sir," Rusk reported, and held his nose when a thick crimson wisp wrapped about his face. "Beg pardon, sir. This red wind kind o' gets me. The squadron of two-hundred grav cuttle-borers is all lined up. I'm assigned as usual, with you on the Warline Patrol."

Captain Hershel nodded and they stood silent for a long moment, wiping the red smears from about their eyes.

Under the muffled glare of field beams the long cuttle-borers lay like silent mastodons of gleaming berylumin. The armor platings were heaped irregularly now with crimson driftings of rojo-spores. The field crew had just begun to withdraw as Hershel approached. The Field Commander thrust his arm through Hershel's, and the metal mesh-togged soldiers of space began to move toward the open

disc doors of the ships. Their faces, as revealed in the glaring beams, were livid and grim.

The Field Commander's lean face was also grim. He crushed Hershel's hand in a silent good-bye. Then Captain Colin Hershel turned away, walked jauntily toward the porte entrance of the lead ship.

Like phantoms drifting up into the night, fifteen great shapes rose into the air, one after the other. They flew in perfect formation, straight out into space. Out where slimy white masses purled in eager waiting. Where death floated softly, and madness reigned. Those behind had named it the Death Patrol, and watched with hopeless eyes as it vanished among the stars.

CAPTAIN HERSHEL stood on the bridge of the lead ship, and one by one, called the images of the fourteen other commanding officers into the televisor oval.

"We must keep in close contact," he admonished. "Our only hope lies in close coordination."

Lean-visaged Rigolo nodded. The eyes in Cartig's oily face became mere slits. And Frannig, of the huge jowls, laughed confidently, his black beard jiggling in savage accompaniment to his mirth.

"Keep sharp watch," said Colin. "We can't be too vigilant."

"What does he think he is!" expostulated Frannig, not knowing that his face was yet on the fading image. "Why, I outranked him on the Mercurian scouting expedition, and now look who the big mugs give the breaks."

Colin's leathery jaws tensed, but he said nothing, and did not reveal that he had heard. Before him, the stransparent curve of the forward sheath was glittering with the stars of space. Soon the sun crawled out of the black shoulder of Earth's shadow.

They were all brave, these men who dared to venture so far into space. But, Hershel thought grimly, there was something foolishly ludicrous about bacteriological creatures being brave. He wondered if the bacteria inside a termite's digestive tract could be brave.

Mars, clumped with whitish froth, slipped by. Venus, ringed with bubbly death, was next. Jupiter, a seared wastelands. At times the amoebic masses made brief excursions in the wake of the space squadron, but no attack was made. There was something devilishly sentient in their manner of trailing the vessel, as sharks follow a doomed ocean ship.

"Any orders, sir?" asked Lieutenant Rusk, poking his saffron countenance from the control cubicle. The sun glared rustily through the glassite disc of a porte, falling across his glittering metal-mesh jacket and illuminating his glistening eyes.

"Take it easy, Rusk," cautioned Colin Hershel. "Same thing."

"They're crowding around back of us," reported Lieutenant Rusk. "Hemming us in. Looks like we're going to have a real fight. There's something about those beings that gives me a crawly spine."

Full speed ahead. While behind, a ring of amorphous, colorless clumps were falling away from the ravished outer planets, clustering between the terrestrial spaceships and the Earth. Pseudopod fingers reached out exploratively, propelling the huge ships across the airless reaches in a jerky progression. Corpuscles. Phagocytes in the blood of a super-beast.

Colin's hand gripped at the metal bracing before the chart table. A gyroscopic mechanism was spinning on small universals, extending an inked rib that was making a crooked graph across the revolving chart, revealing the exact position of the space ship as marked across the void. Yet he was not staring at the charts, but at the torn bits of a woman's photograph. He was taking it hard. But he couldn't help it. Not when oblivion might come at any moment.

A BUZZER on the wall rang. A signal pulsated. Frannig's scowling, bearded face materialized in the screen.

"Look here!" he spat. "I don't want to butt in, but from our lookout in this ship we see those white corpuscles gathering behind. We'd have a hard

time right now, driving back through them. I once saw a space ship they razed. The glassite had melted right out!" Sweat rolled down the pores of the large nose and became lost in bristling black hair.

"You've got your orders," snapped Colin tonelessly.

"I saw a wrecked ship, I tell you," continued Frannig, his eyes wild, "and the bones of the crew looked as if acid fire had burned through them. If it was an ordinary enemy, I wouldn't mind. But those unholy, squirming things. I can't stand them! I—"

"What are you driving at?" asked Colin suspiciously.

"Are you going to turn back now?" came the swift query.

"No," answered Colin, and at that the other's face twisted with fury. He shook a fist in the visor.

"Then I am!" he announced. "I'm going back—"

Frannig's space ship whirled, separating itself from the rest of the squadron, and darted on a solitary path back toward Earth. Captain Hershel watched it in silence. He gave orders that no other ship was to follow.

A great white furler caught the hulk of Frannig's ship. In a moment it was rolling, floundering in a sea of purling, searing matter. Frannig's forward ray-guns shot out their beams futilely; after long moments of threshing, the cloud of viscous matter quieted and slowly rolled away, leaving an unguided hulk drifting in an erratic orbit about the sun.

After this unnerving episode, the remaining ships grouped closer, their two-hundred grav armor plates separated by hardly more than five-hundred-yard interlocked trajectories. A vigilant outpost in Rigolo's sky nest was first to sight the swarm of white motes dead ahead. The lean-faced captain reported immediately.

"We'll have to maneuver soon," Colin told them. "Be ready to turn. Remember that the planets are all in an elliptical plane. Be ready to rise high up over that plane, and dart down at a forty-five degree angle. We're going to have to fight."

That was all. He had hardly ceased speaking when a large clump of matter, looking strangely like a tiny asteroid, came hurling out of space. Twin nuclei in the watery mass seemed to be peering out curiously. Then a tentacle whipped out.

The forward guns had been waiting. Monstrous tripolared projectors swung out of apertures in cowling decks, which were separating like the valves of a clam to reveal the weapon's bulging mechanism. The recoil vibrated through the ship even as purple emanations tongued out. The tentacle caught the impact of the protonic missiles, hesitated, then continued its furling advance.

THE lead ship lurched, shot upward at an angle. The tentacular furler came to a halt, and the entire mass was slowly drawn through the convolution into the front portion of the pseudopod. It had missed by but scant yards. Rusk had jerked automatically at the controls.

The following space ships had been wary, had followed as though sliding through an invisible groove.

Captain Hershel turned and grasped the balance belts above the chart table, for the ship was gyrating again under the deft guidance of Lieutenant Rusk. Out of every corner of space the gluey creations swept, launching an attack upon the terrestrial squadron.

A signal light glittered over the televisor oval. Lieutenant Rusk came lurching in from the control cubicle, his usually serene face transformed.

"The forward detonite bombs are jammed, sir," he reported. "Those red spores must have plugged up the outside launching mechanisms."

"No way to clear them?" snapped Hershel.

"Not without a man getting out in space toggings," answered Lieutenant Rusk.

Captain Hershel shook his head. Couldn't risk that now.

Furling masses waved knobby arms at them as they passed in meteoric flight. Stars flashed on and off, obscured by writhing bodies that gave the impression of bleached devil-fish, wriggling spasmodically. A clotting blotch

formed over the space ship just to the rear—Cartig's vessel. Guns snouted out of holes. Explosions cut white-hot swaths across the vacuum. The amoebic invader, though unhurt, was literally blown away into space, where it reassembled and came in again to attack.

The berylumin noses of the squadron ship cleaved into free space, shot high in a steep slant. Colin Hershel was at the annunciator, giving what orders were necessary. Yet those skilled gunners, whose reflexes were enough to send mighty projectors tilting and blasting detonations mushrooming across space, needed little advice. They fought as the soldiers of space are trained to fight.

At times it seemed impossible that the ships would break free before the pursuing masses hemmed them in. Then again the cleaving berylumin prows would be skimming beyond.

"We can't stand this forever!" gasped Captain Hershel in a brief breathing spell. "Every time we scatter a blotch, it floats back together again."

He was standing at a port, staring across the void at phagocytes that were gathered like thunderheads. Abruptly his vision was blurred by a swarm of red spores.

"Something has happened out there, sir!" exclaimed Lieutenant Rsuk excitedly. "I managed to let fly a detonite bomb, and it was so jammed with rojo-spores it looked like a cloud of blood when it sprayed into the whitish masses, and look what happened when it hit!"

CAPTAIN HERSHEL gripped hard on the control rail, and stared incredulously. An astonishing scene met his gaze. Phosphorescent ovoids were darting here and there like stinging wasps. The red spores from the bomb had settled within the whitish masses, and it was evident that a ferocious battle was on!

Multiplying with astonishing rapidity, the cucumber-shaped monstrosities ballooned up again and again, only to disperse like puffball fungus, sending myriads of tiny spores in long crimson streamers that sought for the leucocyte formations with almost magnetic attraction.

"Those little red devils," muttered Rusk with admiration. "Look at them reproduce. Just what is coming off out there?"

"I don't know," whispered Colin Hershel tautly. He was filled with a sudden excitement. For the first time a ray of hope came to him.

On the control board a tiny spheroid flashed green and a signal stuttered. A voice, shrill and excited, cut the silence as Lieutenant Rusk adjusted the televisor.

"Congratulations!" shouted the voice. "Congratulations from Quentin Lor. I am standing off in space watching your fight. The battle seems to be won. I want to offer my sincere wishes to the captain of the squadron."

Quentin Lor! He had been out there in space with Nyda, safe. But if he had reason to think that the corpuscles were on the point of being vanquished, there was all the more reason to hope!

Hershel, answering some sixth sense, stepped behind the turn of the U-deck where he could observe the televisor oval without being seen, and gestured for Lieutenant Rusk to take the call.

The ovoid screen became misty, and the splotchy features of the terrestrial scientist looked out into the control room, the metallic eyes glinting with enthusiasm.

"May I congratulate you, sir," begged Quentin Lor with a tremulous voice as Lieutenant Rusk nodded awkwardly. "I should have suspected something of this nature."

"The—the rojo-spores did it," stammered Lieutenant Rusk. "I don't know just what happened, or why they attacked the gigantic corpuscles."

"I think I understand," spoke the scientist. "We are existing within the blood stream of a colossal beast. It is the duty of the white corpuscles to exterminate all alien life. Humanity is alien life. Yet even in this super-beast, as in a human being, there exists a form of microbe life that is not attacked by the white corpuscle, but turns about and attacks the leucocyte instead. Such

a disease is analogous to the malady known as malignant leukopenia, common in mankind.

"The rojo-spores consist of such a malignant form of bacteria within the blood flow of this super-beast. Luckily, they have been brought in contact with the white corpuscles before the white corpuscles could attack us.

"Captain, you have made it safe for terrestrials to tread their own planet again. But to whom does the world owe its gratitude, sir?"

"To Colin Hershel!" said that individual, stepping from concealment. "Quentin Lor, you left Earth to its suffering, that you might be safe. You are a coward. You wrote that the next time we met, it would be as man to man. That time has come!"

AT the sound of Captain Hershel's voice a shrill cry sounded from behind Quentin Lor's acid-scarred visage and Colin caught a hurried glimpse of Nyda. Then the oval went blank.

"Locate that ship!" snapped Colin. "I know its type by the controls I glimpsed—L-type speeder. Catch the beam on the indicator!"

After several hurried attempts, they brought the tiny shape of the space speeder into the screen. It was shooting across the firmament with terriffic speed, heading outward into space. The lead-ship broke away from the others, accelerated at a terriffic rate.

"We'll catch it," affirmed Lieutenant Rusk. "Just watch me."

Presently the armor-sheathed spacer was alongside the L-type speeder. Captain Hershel was in space toggings, now, and as the two vessels moved along at the same speed, he opened an airlock and leaped down into space with the towline of a magnetic anchor grasped firmly in his gauntleted fists. The electromagnetic anchor clung near the skydeck port.

A grotesque figure was crawling also from an airlock in the L-type ship. Hershel knew Quentin Lor was in that space suit.

Hershel dived forward, seized the wrist of Lor that held the ray-gun, and sprawled over a jutting bracework. Quentin Lor's weapon went sailing away into the vacuum, even as he stepped forward to deal a murderous kick. Each realized instinctively that only one of them would ever see the inside of a space ship again.

Colin ducked, swung a gauntleted fist that crashed full into Lor's quartzite helmet visor. The shock sent his own body recoiling.

They came together warily, circling for openings. Colin's breath came harshly within the headgear of his toggings. His pulse hammered. He stepped forward eagerly, swung an uppercut that glanced from the merebian shoulder plating of the other, and in return received a forceful jab in the abdomen.

The sun flared across Colin's vision, blinding him momentarily. When he could see again, it was to view his erstwhile antagonist disappearing down the upper port of his ship.

Hurling himself forward, Colin Hershel managed to wedge his armored body in the opening before Lor could close the door. Together, they dropped down to an inner corridor. The pressure of the inner atmosphere closed the upper valve.

A sickening lurch shook Hershel as a flying missle struck his stomach. Jack-knifing his body, he wrenched the headgear from the lower togging. Quentin Lor had divested himself of the heavier portions of his own space suit, and had flung them at his pursuer before turning to run down the U-deck.

The muscles in Captain Hershel's body were like hot ropes of molten metal. Sweat dripped from his brow from the exertion, as he forced the clasp on his headgear, flung it aside and ripped the rest of the cumbersome space armor from his body.

Quentin Lor awaited him behind the aperture that led into the control chamber. They went down together, fists pounding against flesh in swift repetition.

Hershel staggered to his feet finally, saw Nyda, standing beyond, her eyes wide with terror.

BALANCING his body, he battered through Lor's flailing blows. Quentin Lor went down again and this

time did not again come to his feet.

"He kidnapped me, Colin!" the girl cried. "He tricked us!"

"Nyda, what a fool I was!" exclaimed Hershel, reeling groggily on his feet. Then she was in his arms, sobbing on his aching shoulders.

"But, Nyda, I thought you'd chosen to go with him! You didn't come that night, and I thought that meant you preferred Lor to me!"

Later they stood at the prow, watching the bluish sphere of Earth grow against the firmament. The majestic array of the cosmos lay beyond. Galaxies were spread out before their view. They stood before a gulf of infinities. Lieutenant Rusk edged into the alcove.

"We're getting reports that sound pretty good, sir," he said. "The invaders from space seem to have been routed."

"No opposition has been sighted?" queried Captain Hershel, looking very straight and military in his metal-mesh uniform.

"Not a bit," reported Lieutenant Rusk impassively, clicking his heels smartly together.

"That's fine," chuckled Hershel taking the hand of the girl who stood beside him. "I am trying to convince this young lady that it isn't too horrible having a bacterium for a husband."

"That's right, sir," grinned Lieutenant Rusk, with a shrewd glance at Nyda. "You've got my best wishes."

They felt very tiny, standing there before the mighty firmament, flying toward Earth.

ANSWERS TO SCIENCE QUIZ

(See Pages 52-53)

POSITIVE OR NEGATIVE

1. False. The Magnetic Pole shifts too, brother.
2. True.
3. True. Don't forget the asteroids!
4. True. Consult your physics book.
5. False.
6. True.
7. False. Study the properties of uranium.
8. True.
9. True.
10. False.
11. True.
12. True.
13. True.
14. False.
15. False.
16. True.
17. True. It's the difference in pressure that does the trick.
18. False. Consult your astronomy text.
19. True.
20. True.

METER-OLOGY

1. Measures the force or velocity of the wind.
2. Measures the pressure of the air.
3. Measures the intensity of radiant heat.
4. Measures the quantity of heat generated by friction, combustion, or other chemical changes.
5. Measures and detects very small currents.
6. Measures the apparent diameter of the sun.
7. Measures the density or specific gravity of water.
8. Measures very small angles or dimensions.
9. Compares the luminous intensity of two sources of light.
10. Measures the rate at which heat is received from the sun.

TAKE A LETTER

1. (b)
2. (a)
3. (d)
4. (d)
5. (b)
6. (a)
7. (c)
8. (b)
9. (c)
10. (c)

NUMBER, PLEASE

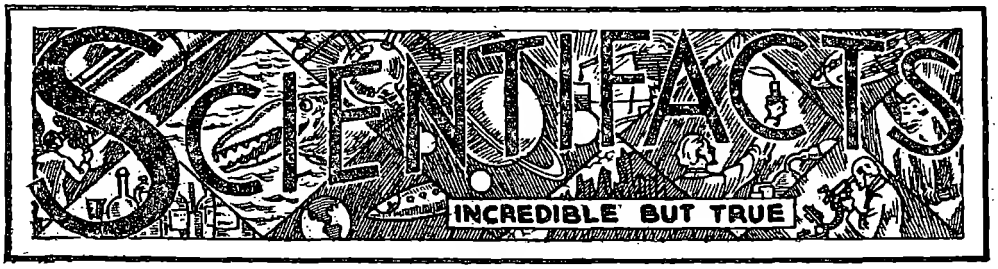
1. Approximate speed of light in feet per second.
2. Acceleration of gravity in feet per second per second.
2. Acceleration of gravity in feet per second.
3. Normal temperature of the human body in degrees Fahrenheit.
4. The mathematical value of **pi**.
5. Approximate speed of sound in feet per second.

IN THE NEXT ISSUE

THE EXTERMINATORS

An Interstellar Novelet

By FREDERIC ARNOLD KUMMER, JR.



A FEATURE OF COSMIC ODDITIES

By J. B. WALTER

THERE IS NO PERFECT VACUUM!

LABORATORY science cannot create a perfect vacuum!

The most nearly complete vacuum ever achieved under laboratory conditions, states Professor C. Ramsauer of Berlin, is represented by a pressure of

five-billionth of a millimeter of mercury. (Ordinary atmospheric pressure is about 300 millimeters.) Yet even this almost imperceptible trace of air still contains about 1,640,000,000 molecules of gas per cubic inch, as against an estimated 1 to 5 molecules per cubic inch in interstellar space.

There is just no perfect vacuum.

THE LONGEST DAY IS THE SHORTEST!

BY an astronomical paradox December 23, one of the shortest days in the year, is also the longest. This can be proved with a pole—if you want to win bets.

The shortest day each year in New York, judged from sunrise to sunset, falls about December 23. But judged by the day which extends from noon to noon—or midnight to midnight—the shortest day is the longest.

It can be proved so by marking the end of a shadow cast by a pole at high noon, when the sun casts its shortest shadow. The interval between high noon and high noon is shortest about September 17. The interval increases until December 23, when the day is fifty-one seconds longer than on September 17.

This is due principally to the combined effect of the eccentricity of Earth's orbit and the inclination of the ecliptic to the celestial Equator, Dr. R. S. Richardson of Mount Wilson Observatory explains. The important thing, however, he adds, is to make a bet with some one on it.

THE WEIGHT-STEALER

THE *Queen Mary* weighs about fifteen pounds less when the moon is directly over it, than when it is on the horizon. In fact, everything which the moon shines directly upon loses a certain amount of its weight. The downward pull of gravity which keeps objects on Earth's surface is ten million times as great as the lifting power of the moon.

Thus, if scientists could weigh the great liner, the *Queen Mary*, when the moon was overhead, it would weigh one ten-millionth less than normally—fifteen pounds less.

SALT OF THE EARTH

ABOUT half of all the salt we produce in this country goes into chemicals. That amounts to four million tons. No other raw material except coal is consumed by the chemical industries in such like quantities. We use another four million tons of salt in seasoning or preserving food, and to spread on roads, to freeze ice cream, and for other uses in which the salt is

not disguised as it is when it blends into chemical products.

Simply as a condiment, the average American uses only 6 pounds of salt a year and probably not more than 6 pounds additional is used annually in preparing or preserving his share of foodstuffs, but the total of the average individual's share of salt in this country last year amounted to—69 pounds!

FAREWELL TO LUNA

THE moon is leaving the Earth! The moon is now about a quarter million miles away and it circles around Earth in about a month. Its present position may seem to us rather permanent, but it is only a passing mood. Once millions and millions of years ago it was much closer and then the Lunar month was shorter. Far in the future it will be more distant and will measure a longer month.

This recession of the moon has been going on for thousands of millions of years, dating back to the time when the Earth had a 9-hour day. It will continue until the day becomes as long as the month, both longer than our present month. The moon will be so far away that its tidal effect will be negligible.

But that will be millions of years in the future.

THE EYE VERSUS THE TELESCOPE

NEARLY every year witnesses the development of some very new and highly sensitive scientific device. Great telescopes gather light from invisible stars and record their prisms on a photographic plate. By use of mirrors the radiated heat from a man a mile way can be concentrated at night on a sensitive thermopile with observable effect. Photoelectric cells can be used to detect minute differences in shade. With all these devices every effort is made to gather in a large amount of light to the receiving instrument.

Now consider the human eye. Suppose it to be looking at the faintest visible star, a star of the sixth magnitude. No telescope, no reflecting mirrors, just an opening a quarter of an inch in diameter through which all of the received light must enter. Someone has estimated that under these conditions about 0.000,000,01 ergs of light enter the pupil per second. At this rate a person would have to look at the star for nearly three and a half billion years to get enough light to warm an ounce of water one degree. The photographic film at the focus of a great telescope may take minutes and even hours to register the light for some of the stars; but the eye, if it can see at all, will detect the light instantly.

LIBRARY OF THE FUTURE

YOU may be able to carry your entire library around with you in your pockets in the near future. By means of microphotography books are being reduced in size many hundreds

of times and printed on motion picture film. Ten whole novels the size of "Gone With the Wind" can be photographed on a 100-foot strip. For reading, the film is run through a home movie projector.

THE NEW METAL

SOFTER than lead, more lustrous than silver, as untarnishable as gold, Indium, Element No. 49, has risen like a new star in the galaxy of semi-precious metals. It is lighter than zinc, melts at a lower temperature than tin, and is one of the most useful and desirable metals known to science. Tomorrow, it will be as famous as chromium is today.

It was discovered by Ferdinand Reich in 1863, and named indium because of its bold indium spectrum. Reich discovered the metal while

searching some ores for the metal thallium. Together with his assistant he precipitated, dissolved, roasted, purified, and plated. His final sample, two ounces, was placed in value at $40,000.

More than 50 years passed and indium remained but a name, a number, and a blue line. Few museums could boast of a sample. In 1924, however, William Murray, of Utica, New York, obtained one gram of the metal for experimental use. Within ten years of that date, however, he was able to display more indium than had been produced altogether in the 50 preceding years. He had a total of more than 250 ounces of the interesting element. Valued at the price of 1864 it was worth more than $4,000,000. Now it was worth only $7000!

Indium is on its way upward in use—and downward in price.

2234 YEARS TO FIND THE NORTH POLE

IT took 2234 years of arctic exploration to find the North Pole and only 137 years of Antarctic exploration to discover the South Pole!

Polar exploration is reckoned from the time civilized man first penetrated

to within 23½ degrees of either pole. On this basis, it took 2097 years longer to find the North Pole than the South Pole!

In 325 B.C. the Greek, Pytheas, sailed from Massalia and became the first man on record to cross the Arctic Circle. Yet the North Pole itself was not discovered until Admiral Peary touched there in 1909. Captain James Cook is the first man known to have sailed across the Antarctic Circle in 1774. Only 137 years later Roald Amundsen discovered the South Pole on December 14, 1911. Captain Robert F. Scott of Great Britain reached the Pole a month later on January 18, 1912.

OUR INCREDIBLE EARTH

YOU have *never* seen steam! Steam is invisible. What is normally called steam is condensed steam and consists of minute droplets of water in the air. . . . The surface of the earth is at *no given time* entirely free from earthquakes. . . .

Out in the Solar System, it's estimated, stars collide with one another on the average of once in 100,000 years or so. . Because dry ice will burn the tissues beneath diseased skin, a combination of dry ice and tincture of gold is now used in treating leprosy.

It may not be long before you can buy whole meals in cans. A patent has been taken on a can partitioned into airtight compartments, to be used for an assortment of foods. . . . The giraffe can see behind himself without turning his head! The eyeballs of the animal protrude from the sockets to such an extent that he can see what's going on behind him. . . . .

Coal in brick form now comes wrapped in cellophane, so it can be neatly piled in your cellar just like cakes of soap and practically as clean. . . . All the spiral nebulae, without exception, appear to be moving away from our galaxy. . . . Dr. Arthur Holmes, eminent British student of geologic phenomena, suggests that the "Earth, Solar System, meteorites, and galaxies, all came into existence about the same time — some 2,000 million years ago." . The French Academy has announced that more than 2,790 languages have been used by civilization. . . .

Your watch is always right at the Earth's poles. All time zones converge there. . . . Scientists say that the human brain can hold three billion ideas. . . .

Few people realize that the surface area of the human lung is nearly 2,000 square feet; or that the intestines contain a total area of nearly 50 square feet; or that the area of the red corpuscles in the blood stream of the body have an area equal to nearly three-quarters of an acre.

THE GREAT ILLUSION

In his heavy space-suit, he leaped toward the unrailed edge

The Earth Is Held in Cosmic Bondage Until One Man Unleashes Its Mighty Shackles!

By WILL GARTH

Author of "The Bloodless Peril," "Rays of Blindness," etc.

THEY were the first men who had ever stepped off Earth. Their stubby beryllium-alloy rocket that for days had been flying out into space was man's first challenge to the infinite. Yet these two men crouching in the windowed nose of the rocket were still at odds.

Strange time and place for discord! The window before them framed the unplumbed black vault, hung with the time, remote pinpoints of the stars. Kenneth Dain was staring ahead at a silver speck of light amid the starry hosts, his thin, dark face and tired eyes a weary and dogged mask. Young Ross Ormond was looking at him, his clean, blond face flushed with exasperation.

"I still say it's crazy!" Ormond burst out. "You didn't dare tell me where we were heading before we started. You

told me, you told everyone, that this first space flight would be to the moon."

"I had to say that," Kenneth Dain answered tightly. "I needed you and knew you wouldn't come if you knew our real destination. But I never had any idea of heading for the moon. What good would it do to reach it—a ball of lifeless, airless rock."

"We could have tried for one of the planets, then," Ross Ormond said wrathfully. "Venus or Mars—"

"Venus is a world without oxygen, uninhabitable, and Mars is a frigid desert," Dain said flatly. "The planets beyond are mere frozen spheres. And beyond them, nothing but space and the stars—so many light years away they can never be reached."

"But why Eros?" Ormond insisted. "In the name of heaven, why head for that planetoid, that little mass of barren rock?"

He gestured angrily toward the silver speck of light that for days had grown steadily brighter.

"Because I don't believe Eros is just barren rock, nor even a real planetoid," Dain said firmly. "There's something queer about Eros—a great mystery waiting for us to solve." He paused for a moment, then said earnestly:

"Years ago, back in nineteen-thirty-six, astronomers of Harvard Observatory discovered that Eros is unlike any other celestial body in shape. They found it is shaped like a cylinder, rounded at the ends, twenty-two miles long and seven miles in diameter. That's stuck in my mind ever since. Think of the strangeness of it—a planetoid with an artificial symmetrical shape, utterly unnatural."

Ross Ormond's jaw dropped. "You can't for a minute think that Eros is some kind of artificial—"

"I think nothing," Dain said quietly, "except that this strangely shaped little planetoid that comes closer Earth than any other body but the moon is the greatest mystery in the Solar System. A mystery that we are going to solve."

YOUNG ORMOND stared at him, indignation gone, strange wonder and a touch of awe in his eyes. That awe increased in the following hours, as the little rocket silently drifted closer to the silvery blob of the mysterious planetoid.

For now they could clearly see that Eros was indeed a huge, symmetrical cylinder, its ends smoothly rounded as by a Titan lathe. A shining, cylindrical mystery, forging through space in its orbit about the sun.

At last, circling around the strange planetoid in a decreasing spiral the little rocket glided toward the curved back of the giant cylinder. The gravitational pull of the enigmatic thing was so feeble that the rocket alighted with the merest jar, bounced, skidded a little, scraped to a stop. Dain and Ormond stared out at the starlit surface of Eros.

"It's metal," said Dain in a strange voice. "The whole surface is smooth metal." He was trembling violently with excitement as he whispered: "You understand what that means? This giant, symmetrical metal cylinder—Eros is a ship! A huge space-ship from somewhere that has been drifting around the sun for ages! A derelict, maybe drifted into our Solar System from outside— God, what this may mean to humanity! Creatures that could build a ship like this must have had enormous knowledge! Ross, we've got to get inside it!"

Feverishly, he clawed the two metal space-suits out of their locker. Ormond's young face bewildered.

"But we don't know anything about this thing. We ought to go slow."

"Slow?" cried Dain, struggling into his suit. "Down in this great cylinder may lie the past wisdom of a race, superhuman powers for man. And you can talk of going slow!"

Ross Ormond put on his own suit, screwed down the glass-fronted helmet, touched the valve of his oxygen tank. Dain was already helmeted and snapping in the telephone cord between the two suits.

"Come on, Ross!"

Their two bulky figures jammed the air-lock of the little rocket. The inner door scraped Ormond's arm as it closed. Then the outer door gaped, air whisked out, and the two men stepped

out. A floating stride, and their lead-soled shoes clicked on Eros' metal surface.

Ormond's spirit quailed at the unearthliness of the scene. They stood in black space beneath the cynical, distant stare of the stars. Under them was the polished, unbroken gray metal of the great cylinder's back. It stretched away from them in a vague, unreal plain, a smooth little world whose horizons were curiously close.

Suddenly Ormond pointed toward the distant end of the mighty cylinder. A dark, slender thing like a stubby rod projected at an oblique angle from the rounded end. It was pointing back through the gloom of space.

"Looks like a finger," Ormond whispered. "Pointing at the sun."

Dain caught his breath sharply. "Sun power? Is that how the creatures who built this huge ship operated it? We've got to look at that!"

They started back along the vast cylinder in a slow, floating walk, their lead soles clicking on the metal. The dry taste of fear in Ormond's mouth was new and strange. He had never much feared anything human, but this—

THEY had gone less than a mile when abruptly before them yawned an oblong pit of black shadow, more than two hundred feet long. They peered down into it. About forty feet deep, it had a metal floor and was quite empty—an oblong recess in the back of the Titan cylinder.

"It may be a way inside!" Dain's voice mounted in excitement. "It looks like an air-lock of some kind!"

Dropping to his knees, he crawled along the edge of the recess until his groping, metal-gloved fingers found a series of heavy eyelets imbedded along the edge. But their purpose, like all else here, was incalculable. Without wasting time in speculation, Dain untied the little coil of super-light chain that hung from the belt of his suit, and tied the end to one of the eyelets.

With a quick word to his companion, he slid down the chain into the recess. Ormond followed, felt his sliding fall checked by the thump of his lead soles on the floor of the oblong well of deep shadow.

"There ought to be some way inside from here, if this is an air-lock," muttered Dain. "Controls somewhere, if they still operate after all the time this ship must have been floating, a derelict."

He was reaching for the little lamp at his belt when both men froze as though struck by the cold of space.

With a low, muffled vibration, a broad metal cover was sliding shut over their heads; closed steadily, pulling a black curtain across the stars. Then they were in absolute blackness. The murmur of vibration abruptly ceased.

"We're trapped!" Ormond's voice was a strangled whisper. "Dain, there's something still in this ship!"

"No!" Kenneth Dain gripped his metal-clad arm. "I think I know what happened. Somehow we touched off the control of the outer door of this air-lock, made it close. Wait till I get my light going."

"Ken, listen!"

Breathlessly listening, they heard a hissing sound, faint at first, but growing louder each second.

"Ken, that sounds—like air being released into this lock!"

"It can't be. For ages this ship has—"

Abruptly the hissing sound had stopped. A section of the air-lock's wall was sliding open. And from the interior of the enormous ship, light poured into the dark lock! Hazy light that showed the blank metal walls of their trap, the weird helmeted forms, stiff with amazement, looking through that opened door into the interior of the giant ship.

Dain and Ormond saw a dimly lit chamber of large size, metal-walled. Great towering things were in it that could hardly be defined in the hazy light. But Ormond and Dain hardly saw them. Their startled eyes had leaped toward the moving, the living things before them!

The creatures numbered a half dozen, shudderingly unterrestrial. Each was a soft, bulbous white mass, some eighteen inches across, from which de-

pended eight long, thin, trailing white tendrils. The creatures did not stand nor move upon these tendrils. Each bulbous white mass that was both head and body floated in the air, trailing the tendrils beneath it.

DAIN AND ORMOND were frozen statues as the weird creatures floated toward them. Now Kenneth Dain numbly saw that in the floating white body of each creature was a ragged, glistening spot that might be an eye. And that two of the floaters held small instruments, like tiny harps, in their tendrils.

Motionless, two space-suited, helmeted Earth men stared wildly as the white floaters entered the air-lock. One raised a thin tendril and pointed toward the interior of the ship. The meaning was clear.

"No!" cried Ross Ormond, his voice a high-pitched yell inside his helmet. "No!"

He whirled and plunged clumsily backward. Swiftly as thought, one of the floaters raised his harplike instrument. A thread of light flicked from it and struck Ormond, then was gone.

Ormond screamed, a raw and appalling shout of agony, torn from him by the exquisite pain that for an instant throbbed through every nerve. He stood then, shaking, sick, unable to move. And again the foremost floater pointed into the ship.

"We've got to go!" Ormond sobbed. "God, they can wrench your heart out with pain somehow! They've got us."

He moved forward drunkenly. And Kenneth Dain's leaden steps were almost as unsteady as he followed.

"They've been in here, some of them, in all the ages this thing has been circling the sun," Dain whispered hoarsely. "But that can't be possible!"

But it was possible! For here was incredible reality. One of the weird floaters glided ahead, its tendrils grotesquely trailing like a woman's train. The others followed, harp-weapons raised alertly. In dreadful silence the Earth adventurers stumbled through one hazy, mysterious room after another, at last entering a long, blank-walled corridor.

Far ahead, a brilliant splash of dazzling white light lay across the corridor. Dain and Ormond paused in stupefaction as they reached it. One side of the corridor was open, without wall or rail, and they looked down as from a giddy catwalk into an immense space that was a colossal room occupying a great part of the giant cylinder. They could not tell how distant were the walls of the vast chamber, their eyes were so blinded by the thing blazing at its center.

It was a stupendous tetrahedron of pure white light, poised with apex uppermost, hanging weightlessly down above the floor of the vast chamber. All around it, in a circle of which the dazzling tetrahedron was the center, stood a ring of huge glass spheres. Each sphere was filled with curdled white light or force, and from each a thin stream of light jetted inward to feed the central tetrahedron.

Kenneth Dain peered awedly down at one of the huge glass spheres almost directly beneath. Inspiration flashed over him.

"Ross, these spheres are reservoirs of force!" he cried. "They collect force from the sun and store it somehow in the spheres to keep the tetrahedron going. But what's it all for?"

"It's a bad dream we're having," Ross Ormond muttered thickly.

The floaters behind motioned them ahead, raised their tiny harps warningly. Hastily Ormond and Dain stumbled on. They passed along the corridor a great distance, then through more chambers. They met only two more of the floating creatures on the way—it seemed the huge ship held but few.

WHO and what where they? Dain wondered stupefiedly. What had they been doing here in this artificial planetoid for ages? Then arrival at their destination cut short his wild thoughts.

It was a small, round, bare metal room. At its center hung another of the floating creatures, poised motionless, with thin tendrils hanging as though lifeless. The glistening patch

of his eye contemplated the two Earth men. The captors spoke to this solitary creature with subtle ripplings and stirrings of their tendrils that Kenneth Dain knew must be speech.

The solitary floater fixed that blank, unhuman eye upon the two captives, grotesque in their heavy space-suits. Then his tendrils rippled briefly. In answer to the command, one of the creatures floated out of the room, and soon returned with a square, boxlike thing mounted on a slender pedestal. A switch was touched. A yellow spark flashed atop the box and instantly expanded into a glow that filled the round room.

"What are they doing?" faltered Ormond.

His words froze on his lips. And Kenneth Dain went rigid. Each was hearing a voice that seemed to speak inside his own brain, in his own language and accent.

"So the sons of Latma go forth from their world and invade space again!" spoke the inner voice. "We see well now how wise were our ancestors when they set up the great illusion."

"Ken!" Ormond's whisper was husky. "Ken, did you hear—inside you? It's that creature there, talking to us somehow—"

"Understandable enough," jerked Dain, though his face was like marble. "That box sets up a zone inside which makes thought transmission possible."

"You are right, son of Latma," said the inner voice in his brain. "Long ago we of Altor used such a device to speak to your forefathers. Aye, long ago, when your world of Latma warred upon our world of Altor, before we conquered you and prisoned your race forever with the great illusion."

Kenneth Dain spoke with an effort. He knew that the creature before him could not understand, could not even hear his words. But in speaking them he was thinking them, and the creature should be able to understand his thoughts.

"We do not understand," he said with forced steadiness. "We came from Earth, which you call Latma, not expecting to find any life here. We did not believe that any life existed in the Solar System except on Earth."

"There is no life in your Solar System except on your own world," was the unexpected reply. "Our world Altor does not lie inside this system. It is a planet of one of the nearer stars, and every three of your years some of us come from Altor to relieve those who have been operating this station."

"Every three years?" gasped Dain. "But that's impossible! Nothing could reach here from even the nearest star in three years, so distant are all the stars."

"That," came the Altorian's thought, "is where you are deceived. You and all your race, deceived for ages by the great illusion."

"The great illusion?" repeated Dain. "I cannot understand you. What is this illusion?"

THE Altorian's answer came slowly, almost sadly, and at the first thought in it, both men started.

"Sons of Latma, you must both die. It is not our wish to destroy you, but you have come to the one place in the Solar System that holds our secret, our hidden defense against your race. You must die, lest you carry back to your people the secret that would release them to invade our world again some day. Yet before you are destroyed, it may a little ease your end to learn that which none of your race, for long ages, has known; to look through the veil of cosmic illusion that for ages has hemmed your world.

"You think that the other stars are unthinkably far from your own Solar System, so distant that they can never be reached. That is the great illusion! For the truth is that the stars are hundreds of times nearer your System than you and your scientists believe. So near are they, indeed, that it would not be hard for you to reach them in craft similar to the one that brought you here."

"That can't be!" exclaimed Kenneth Dain incredulously. "Why, our astronomers have for years measured the stars' distances, by every delicate method. We know that even the nearest star is countless billions of miles away."

"It is the purpose of the great illusion to make you think just that," the Altorian informed him. "As long as we maintain the illusion, you of Latma will believe the other stars too distant ever to reach, and so you will never try to invade our world again."

"So long as you maintain it?" repeated Dain. "Do you mean to claim that you—"

"Yes, we Altorians created and for ages have maintained the illusion," replied the thing with cold, passionless finality. "Long ages ago, the people of our world rose to great power and knowledge, greater far than you have now. They built space-ships and ventured first to the planets of your own System, then out to the nearer stars. For there was no illusion existing then. They discovered Altor, revolving about one of those stars, invaded it and tried to conquer us.

"After tremendous struggle, we forced them back to their own System and world, smashed their proud civilization to bits, and well-nigh destroyed all their race. But we could not wholly destroy them, and we knew that some day they would rise again to power and scientific wisdom and would invade our world once more. To prevent that, we decided to prison them forever in their own system, by setting up an eternal illusion that the stars were too unthinkably distant for them ever to reach.

"We built this great ship, and all it contains, and towed it here into an orbit about your sun. It draws power from your sun, power which is stored in spherical condensers and fed ceaselessly into the shining tetrahedron. That tetrahedron emits a force that maintains a constant sphere of interference around your Solar System, a shell of energy that refracts and bends all light entering this System from the outer Universe. It so distorts and diminishes the lightbeams from the outer stars that from inside the System those stars appear fearfully remote. Aye, and so cunningly that even to the most delicate instruments of your world the stars still appear remote.

"We had at first thought of making all the planets in your own System, including this ship-planetoid, also appear inconceivably far. But then you would have seen the inner planets in transit across the sun, and would have realized you were somehow deluded. And we knew that after a few fruitless trips to the lifeless planets of your System, you would give up space-travel, thinking the other stars too far away ever to reach. And you alone of your people have been allowed to learn our secret —before you die."

"Dain, they're going to do it," Ross Ormond said thickly. "They're going to kill us."

"We do not wish to." The thought-voice of the Altorian was almost sympathetic. "But you cannot be allowed to endanger the maintenance of the illusion which is our world's safety."

KENNETH DAIN'S brain was staggered by the incredible revelation, this cosmic deception that for ages had been practised. Earth men believing the stars so unthinkably far—

A wild thought flashed across Dain's brain—and he instantly suppressed it. Then he laughed jarringly.

"This place—your whole illusion—are already doomed," he said grimly. "Before we landed here, we flashed back word to our world that Eros appeared to be of artificial construction and that we were landing to investigate. We may not return, but that message will bring others here. They will keep coming, until they have penetrated your secret. The illusion will be destroyed!"

The Altorian's tendrils rippled suddenly in a tremor of excitement. Then they quieted.

"In that case," came the creature's cold thought, "you yourselves shall remove the danger in which you have placed us. You shall return to your craft and send another message saying that this is a poisoned, radioactive mass that kills all life and that you yourselves are dying. That will keep others from coming here, ever." And the thing added suspiciously: "But do not think that you can escape when you reach your ship or can send any different message. Some of us will go with

you into your craft, with this thought-transmission device, so that we can read your message in your mind as you send it. And at the first wrong word you send, or the first move to escape, you will die in awful agony, instead of dying easily."

"You can kill us but you can't make us—" Dain broke off with a scream of pain. One of the Altorians had raised his harplike weapon, and as a shining thread darted toward Dain, he felt heart-freezing agony twist every nerve in his body.

"Stop—we'll do it!" he choked. And as the agony ceased, he staggered, eyes distended and face contorted.

"We go, now," the Altorian told him.

The yellow glow from the thought-box was turned off, and one of the creatures lifted the mechanism in his tendrils. Others floated silently forward around Dain and Ormond as they stumbled out of the room. The harp-weapons of the two guards covered the earth men.

They passed back through the hazy chambers and the long corridor, again saw the dazzling splash of light from the blazing tetrahedron that maintained the great illusion.

"Ken, what are you trying to do?" asked Ormond hoarsely. "We have no radio. And it will do us no good just to get back into the rocket. We've no chance to escape these things."

"We can't escape, no," Dain answered, his face pale and taut. "But before we die we can destroy the work of these devils; if we're lucky, can destroy the illusion that otherwise will prison men forever inside the Solar System"

"But how?" Ormond asked dully. "There's nothing in the rocket—"

Kenneth Dain's voice was low, his eyes gleaming strangely. "We have one chance."

SURREPTITIOUSLY he unsnapped the cord that connected his space-suit to Ormond's as the weird party reached the portion of the corridor where the wall was cut away to give vision down into that vast chamber of the tetrahedron. Down there pulsed the dazzling brilliance of the unearthly thing that maintained a cosmic deception, the glassy spheres of curdled force that fed it glowing in a huge circle around it.

And suddenly Kenneth Dain acted! With a terrific effort, in his heavy space-suit, he leaped toward the unrailed edge of the corridor, through the floating Altorians beside him. And with a wild, muffled shout, he plunged over the edge, down into the great chamber, leaping straight down toward one of the huge glassy spheres of force.

Threads of destroying light shot from the Altorians' harp-weapons at his falling body—but too late. For Dain's metal-clad body was already crashing down into the huge sphere. Its glassy substance cracked, then shattered under his crashing impact. And the terrific sunpower stored within it burst out in a destroying flare of blinding, raging force. That wave of released and raving energy cracked and broke the other spheres instantly. Within a heart-beat of Dain's plunge, the giant cylinder of Eros and everything within it was a flaring, fusing wreck.

* *

The astronomer on duty in that California observatory stretched his back painfully, straightening from the eyepiece of the great reflector as his relief approached.

"Anything yet?" the approaching man asked hopefully.

The astronomer shook his head discouragedly. "Not a sign. They were supposed to set off a magnesium flare if they landed on the moon, and where is it? It's days late, too. Dain and Ormond are lost."

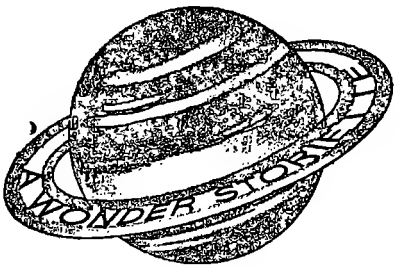
He walked out of the observatory and stopped where a little knot of his colleagues stood on the steps. They were looking at the crescent of the moon, beginning to decline westward amid the tiny points of the stars.

"Nothing yet," he said in answer to their question. "Something happened to them. It must have."

He reached in his pocket for his pipe, mechanically looking at the star-sown sky. Then—it happened!

(Concluded on page 129)

Time On My Hands



Wanted: A Perpetual Motion Machine!

By MORT WEISINGER

Author of "The Nth Degree," "The Price of Peace," etc.

I CLICKED the teledisc shut and as the image faded slowly from the screen I pressed the photobeam button. The door slid open, and Dr. Cartier came striding in. He was a big, husky chap. I'd seen him on television a couple of times, and recognized him instantly.

Two weeks after Nicholas Lansdowne was drowned in a trans-ocean rocket crash, I was appointed chief executor of the Lansdowne millions. Since then scientific birds have been parking on my doorstep day after day. Requests for various endowments, solicitations for subscriptions to scientific projects—they all wanted part of the Lansdowne green. Old man Lansdowne hadn't left a relative or friend in the world. He'd left a dozen millions, though, that he wanted donated to "worthy" scientific projects.

Eccentric? You said it. Lansdowne wouldn't give a cent to the New World Hospital. The Floating Museum couldn't squeeze a dime out of the old duck, either. But just come up to Lansdowne with plans for a perpetual motion machine and you could write your own check. Lansdowne had backed everything from a suction-compression device that was supposed to wring gold ingots out of sea water to an ultra-short wave transmitter that the inventor claimed would make organic flesh invisible. The only thing it ever made invisible was the cash Lansdowne gave the faker.

Now that there was plenty of dough in the old reserve, with me alone to decide when to give it out, it was a different story. If some guy approached me with plans for a fourth-dimensional windmill he had to show me how it worked before I'd sign on the dotted line. So far I haven't seen one of these things that could work. Come into my office some day and I'll show you plans for gravity-nullifiers, death rays, atom smashers and thinking robots. But none of them is practical.

Dr. Cartier was one of those cool chaps. The moment he entered he came right to the point.

"Mr. Wayne," he said, "I'm here to demonstrate a time-traveling machine. I've got a model outside. And it works."

He said it simply, and I guess he meant it. As he stood before my desk I turned pages inside my brain wondering in what connection I'd heard of the chap. Then I remembered. Dr. Cartier was assistant to Professor Ivan Deteroff, perfecter of the three-dimensional movies.

A TIME-MACHINE, huh? I'd have to consult my files. It seemed to me I had a few in the house.

"If you've got the stuff, skipper," I told him, "Larry Wayne is your Midas touch. Wheel her in."

Doc Cartier nodded sharply.

"The machine's out in my car. I'll be back in a minute."

I watched him leave the room. He was much younger than I had thought. As soon as the door slid shut I grabbed

for the files, riffled to the Ts. "Terrestrial Television"—"Tide Control"—there, I had it! "Time Machines." There were just three reports. All marked "NO!"

The doc was back just as I snapped the file shut. He was holding a hexagonal little box, about three feet across and two feet wide. It looked like one of those portable gold-finding instruments.

"I'll be brief," began Dr. Cartier. His gray eyes were strange as he put the little box on my desk. "When I spoke of inventing a time-machine, I meant that I had discovered a method of viewing events that have happened in the past. You're familiar with the theory of Flammarion, the French scientist?"

I nodded. This was old stuff. But I wanted to see how Cartier was going to put it across.

"Flammarion's idea was something like this," went on Cartier. "Light travels at one hundred and eighty-six thousand miles a second. We know that the gleams we see from certain stars started traveling toward us centuries ago. Suppose some scientist on the planet of some galaxy thousands of light-years away studied the light waves speeding away from Earth through some super-telescope? What would he see? He wouldn't see what is happening on the Earth today, because the light waves speeding away from our planet haven't reached his world yet. Our super-astronomer would see events that happened yesterday, eons ago. Columbus discovering America. The Crucifixion. The World War. My machine picks up these escaping light-waves, throws them on a screen. Get me?"

"Perfectly," I told the doctor. "But there's one fallacy in your theory. You birds—"

"My machine isn't based on any fallacy," Cartier interrupted coldly. "It's absolutely sound. Here, I'll show you."

With a few deft turns he twirled some of the gadgets on his little box and the thing started humming.

"Thus far my machine hasn't been perfected sufficiently to catch up with events in the far-distant past. I won't be able to show you anything before the year 1900. If I had one hundred thousand dollars, I'd be able to speed up its power. I could go way back to the French Revolution."

"Get me the Lindbergh parade of Nineteen twenty-seven," I asked. "Or no can do?"

"I'll try," said the doctor. "You realize that the machine may go dead at any moment. It may take months to repair it. The parts cost money."

He twisted some more dials and, just as I'd expected, a picture took form on the framed disc in front of the box. I stared closely and a definite pattern took form. It was the Lindbergh parade, all right. It was just the same as I'd seen in my history-newsreel classes. Mountains of ticker tape. Flags waving. Fifth avenue looking like a snowstorm. And how that mob was cheering!

And then the image blurred suddenly, and the screen turned blank. Dr. Cartier turned to me, dismay on his face.

"She went dead on me. But you're convinced? Can I have a contribution to help perfect the machine?"

I REACHED for my folder marked "Time-Machines." Then I scrawled on a sheet of paper:

"Dr. Cartier. June 17, 1960. Fraudulent."

"Sorry, son, no soap," I said at last. "I thought you said your machine was okay."

Dr. Cartier turned white. "What do you mean?"

"Go back to your movies," I told him. "You said you could pick up light-waves of events that happened in the past. Swell. But sound travels at about one thousand feet per second. If your machine worked as you claimed it would, I wouldn't have heard that mob cheering. I would have heard some other sounds. Light and sound are not naturally coordinated, you know.

"I made it easy for you by picking some stock scene like the Lindbergh parade. You probably had a lot of other historical ones ready to suggest to me. It was clever of you to assemble the whole movie outfit in so small a box. But your invention just wasn't —sound!"

TERROR IN UTOPIA

A Complete Novelet of Super-Science

By PAUL ERNST

Author of "The Mind Magnet," "Protoplasmic Station," etc.

CHAPTER I

The Pain Annihilator

IF the world could have listened in on that talk between Sigmund Kohl and Richard Prince it might have judged Kohl mad, and locked him up. Or it might have gone wild with joy and proclaimed him the greatest benefactor mankind had ever known.

At any rate, it would certainly have been tremendously excited, could it have heard Kohl talk. But of course it could not. Kohl saw to that. He locked the door of his study carefully before talking to his physician friend, Prince.

Then, brusquely, he sat down at his desk and motioned for Prince to take a seat opposite him.

Prince, a thin, tired-looking man with dark hair and eyes, sat down and lit a cigar. His hand was shaking, which was most unusual. For Prince was a surgeon, specializing in operations of the spine, and his hands did not often shake.

"You say you've actually discovered a universal pain killer?" he asked the eminent physicist.

Surgeons operated on victims with-

"I have," repeated Kohl, his deep voice quivering with feeling. "Hard to grasp, isn't it? An agent that will banish pain forever from the world! As easy to take as mineral water, and as easily and cheaply produced. No more headaches. No more toothaches. No more rheumatic pains, or hurts from wounds or disease. No anesthetics necessary in operations—that will interest *you* I dare say. Prince, it's the greatest discovery of the century."

The surgeon shook his head slowly.

"If what you say is true, you're the greatest discoverer of all time. But I simply can't believe it."

Kohl laughed.

"Of course you can't. The idea is staggering, presented so bluntly.

Sigmund Kohl's Elixir Could Free Humanity

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"Of course you can't. The idea is staggering, presented so bluntly. Fancy a man being able to watch his own leg amputated at the knee, with no anesthetic of any kind, and feeling no pain. Not that he'd want to watch it, of course. But you get what I mean."

"Kohl, are you sure?"

"I am sure. You should know that I never announce a discovery that hasn't been proven time and time again in my laboratory. I have something of a reputation, my friend."

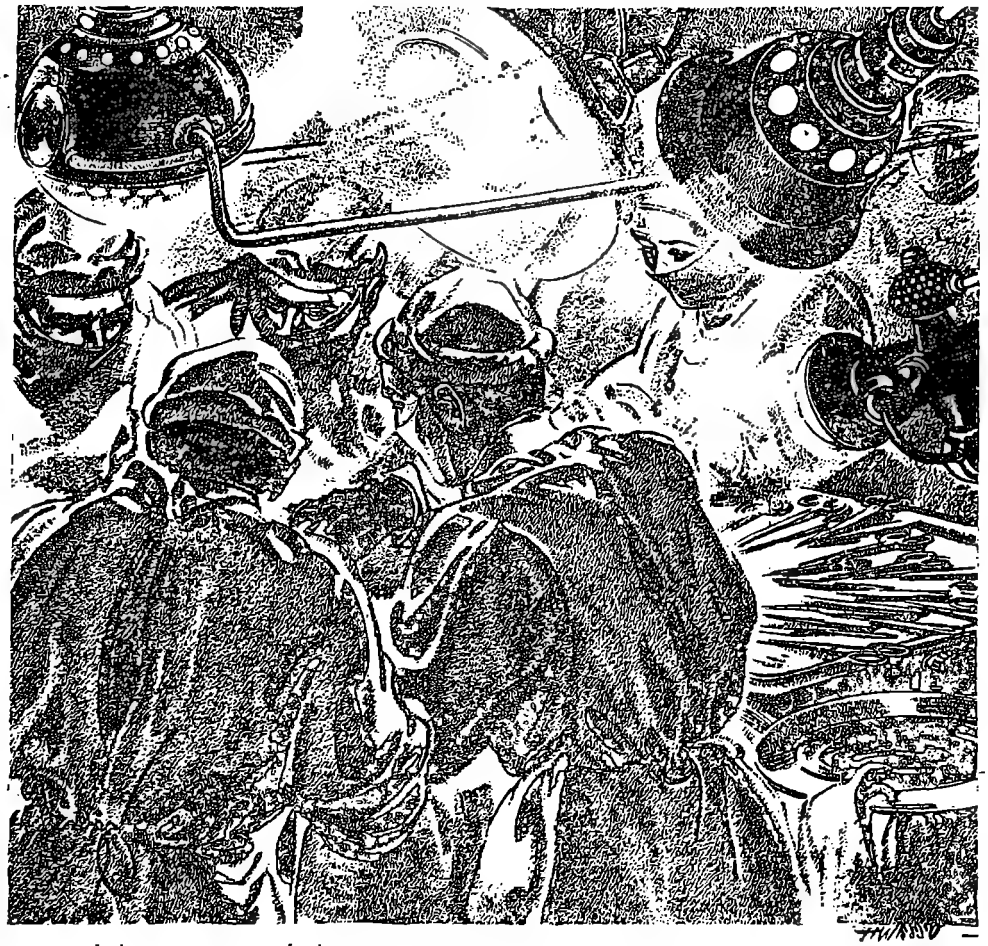
PRINCE nodded. Kohl's excellent reputation was a byword in the field of science. It had to be, what with the startling things he brought forth from his workshop now and then. Specializing in electrical phenomena, he was chief of research for the world's largest electrical products corporation. He was the inventor of the artificial fever machine. It was Kohl who had worked out the principles of the new ultra-violet sun-lamp with which physicians hope to defeat the disease of old age. Many more things, commercial, pathological, and purely experimental, had come from his great laboratory.

Still, Prince could not believe.

"Would you mind showing me?" he asked.

Kohl smiled. He opened the middle drawer of his desk and took out a flat pint bottle of plain glass, unlabeled. There was a faintly pinkish fluid in it.

"Although you are my friend," he said, "I rather hope you are *not* feeling well this evening. Otherwise the dem-



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onstration will lose some of its force."

"I'm feeling rotten," Prince said brusquely. "I have a devil of a headache."

"That," said Kohl, "is fine."

On his desk was a tray with a vacuum bottle and two glasses. He took up one of the glasses and poured it half full of the pinkish liquid from the pint flask.

"Drink," he said.

Prince took the half-filled glass. He gazed at Kohl over the rim of it for an instant before swallowing. He was filled with the importance of this moment.

If what Kohl said he had done was true . . .

But he simply couldn't believe it. No more pain. The world freed at a stroke from all physical discomfort. It was impossible.

He drank.

Kohl watched with his inscrutable smile.

For a moment the surgeon felt a sense of bitter disappointment. The stuff had no taste at all. Surely anything with the potency Kohl claimed for this, would have some taste. . . .

Prince sat straighter in his chair.

"It acts quickly, doesn't it?" Kohl said.

"It—it certainly does!" exclaimed Prince, his eyes widening.

When he came to Kohl's house his head had felt as though the top of it were about to blow off. One of the maddening headaches to which he had laboriously accustomed himself during years of affliction.

Now—

Why, now his headache was disappearing!

Where before he had stoically ignored a pain that banded his forehead with an iron ring and pressed like dull spikes against the backs of his eyeballs, at the present moment he felt no pain at all.

AND in an instant the curious process went further.

From feeling no pain in his head, he began feeling nothing unpleasant whatever. He was no longer conscious of the harsh pressure of the chair in which he sat. His feet had been a little cold, and a little uncomfortable in tight shoes; now he could not feel that slight discomfort.

He seemed to be many pounds lighter, animated, buoyant.

"Rather a happy feeling, isn't it?" said Kohl, who was watching him intently. "Freedom from the fleshly envelope, in a sense. For the first time, man is really free!"

"Good heavens!" Prince said hoarsely. "Good heavens!"

"Now I'll show you something else," said Kohl. "Something that will look rather ghastly, but will prove my discovery as nothing else could. Hold out your hand."

PRINCE held out his hand. Kohl swabbed a long needle in alcohol. He grasped Prince's wrist with his left hand. With his right, he inserted the point of the needle under Prince's thumbnail.

He pressed, slowly and deliberately. Prince, in numb wonder, watched the length of steel penetrate under the nail. Up and up it went, through flesh as exquisitely sensitive to pain as may be found on the human body. The point stopped finally at the very base of the nail.

There was no pain.

"Great God!"

Prince was dazed by what he had seen—but had not felt.

"Kohl—this stuff kills pain, all right, unbelievable as it seems," he said. "But does it kill *all* sensation? Does it kill pleasure too?"

Kohl shook his head, still smiling.

"As we have long known, there are two separate sets of sensory nerve impulses: those reacting to pleasant, and those to unpleasant stimuli. My discovery kills only the painful stimuli. Try a cigar."

Prince lit a cigar. He puffed experimentally, then shook his head in wonder.

The burning tobacco was as pleasantly soothing as ever, tasted as well as it ever had. Indeed, it tasted better. There was no longer the slight bite on his tongue. Pleasure was not only unhurt, it was heightened.

CHAPTER II

The Experiment

KOHL read his next question in Prince's dark eyes.

"There are flaws, Richard," he said regretfully. "Some pleasures are almost akin to pain. Those are robbed a little of their poignancy by my discovery. But I think we can accept that disadvantage in view of all the advantages."

"I should think we could!" said Prince. "How in the world does this stuff act on the human body?"

"I can hardly formulate an answer myself," said Kohl solwly. "I discovered it partly by accident. I'm not entirely sure myself as to its inner mysteries, but the nerve synapses, in some fashion, become open gaps, broken circuits, over the entire nervous system whenever painful sensation attempts to register with its faint electrical impulse, along the nerves and on the brain."

The two men talked, then, late into the night, discussing the Utopia that could exist in a world where mankind would have release from pain. And the effects did not wear off from Prince's body. Four hours after he had swallowed the pinkish stuff he still felt that freedom from all harsh physical pressure, that sensation of delicious buoyancy.

"What do you plan to do with your discovery?" Prince finally asked.

Kohl's smile became secretive.

"That, my friend, I will not tell even you. I'll tell you what I plan, but not how I plan to do it.

"I am going to present my discovery, free, to the world. It is too big for monopoly, it belongs to all. However, you and I, as practical men, know that men are apt to refuse as worthless or a hoax what is offered free. If I were to announce beforehand what I intended to do, people would either call me insane or suspect that something sinister went with my gift. So I am going to give it away, at first, without anyone knowing about the gift.

"I shall secretly manage to treat everyone in our city of Carversville. The people will gradually find out what has happened to them. Then, when they've discovered the gift made them, I shall tell just what was done. And after that, with proof afforded the world by the experience of a city of a million people freed from pain, I can extend the gift to all races and countries."

Prince pursed his lips and whistled soundlessly.

"You would dare to do a thing like that without notice or preliminary explanation?"

"Dare?" said Kohl, puzzled. "Dare? what do you mean?"

"I mean there may be repercussions to this of which neither of us can dream. There might be some after-effects to your drug which you haven't as yet had time to test. People might become mentally unbalanced at the huge difference of life without pain, after life with it. It's a serious thing to force anything, even a blessing, on a million people!"

"Nonsense," said Kohl. "Carversville will erect statues to me. Not that I want the damned things."

"But—"

"I've thought it over for a year, Richard. And I'm decided. By this time tomorrow night Carversville will be a city without pain!"

"How on earth can you reach a city full of people overnight?"

Kohl's smile again became secretive.

"That's my business, Prince. Here, drink the rest of this. It will keep you as you are until tomorrow, when you will be treated, without your knowledge, as all the rest in Carversville will be treated. Immunity to pain! It will be yours and everyone else's."

IT was four in the morning when Prince left for his own home. He fell into a lovely, untroubled sleep—to be awakened at eight by one of those calls to which the great of the medical profession are always subject.

In the wilds of northern Canada a well-known mine owner had fallen and broken his back. By dogteam and airplane a messenger had come to Prince,

the greatest spinal surgeon in the middle west. The mine owner could not be moved. Would Prince go back with the messenger and operate on the spot? It was the rich man's only chance of life.

Prince was wild with regret, but he did not hesitate. He hated to leave the city which was to know the greatest liberation of all history; but nearly three thousand miles north lay a man with a broken spine who needed just his magic fingers to save his life.

Prince went to the wilderness, where there were no trains or telephones or telegraphs. There wasn't even a radio in the lonely outpost where the mining man lay. No word from Carversville, but he'd get back in forty-eight hours after the operation .

He didn't get back for nearly a month. A blizzard came which made it impossible for a plane to take off.

Before the first day of his weather-imposed exile in the far north had passed, Prince was a crazy man, raging to get back. He had thought of some things in connection with Kohl's discovery that he should have thought of the instant he heard it.

It was criminal lack of common sense in a physician and surgeon, but it was true.

Prince began thinking lucidly now, all right! His thoughts set him to pacing up and down in a snowbound log cabin, biting his knuckles and muttering in anguish to himself.

It was fortunate for Prince's sanity that he could not see Kohl at that moment.

In the study where they had talked, Kohl was slumped in the chair before his desk. On the desk was a sheet of paper, on which he had started to write, but which was bare save for the heading: Formula. On the floor beside the desk was the pen that had written the word, dropped from his limp hand.

Kohl's wide eyes were fixed on the paper. The chair-arms supported his body as he sat there. If they had not, his body would have fallen from the chair. For Kohl was dead. In his inner ear, an abscess had burst, reaching the brain, and Kohl was all through—scarcely an hour after presenting the million souls in Carversville with freedom from pain.

Not one person knew what had happened. The originator was dead; the one other who could have explained was trapped thousands of miles away.

But the city was not long in discovering the miracle.

REALIZATION started, of course, among the doctors.

A physician in a slum district near a big tire factory treated an emergency case just three hours after Kohl had died so abruptly in his study. The case, a smashed hand, was promptly disposed of. And then the doctor sought a telephone and bewilderedly called a friend of his on the other side of town.

"I just had an amazing case," he said, voice sounding strange even to his own ears. "A most amazing case! A workman was brought in with his right hand smashed. It was literally pulped. I'm afraid it may have to be amputated. But the queerest thing about it was that the fellow seemed to feel no pain. What do you think of that?"

The answer came over the phone in accents as bewildered as the first doctor's.

"I can match your experience. I just got through setting a dislocated shoulder. A little girl was brought in with her shoulder cut badly. She'd fallen while roller-skating. She didn't seem to feel it at all, so I set it on the spot. She didn't feel a thing. I tell you, I couldn't believe it. That's a fairly painful business, setting a dislocated shoulder. But this little tyke didn't even blink. What do *you* think of *that?*"

Neither doctor knew what to think. Each had had an experience outside the pale of their medical knowledge. They talked to others in the profession.

At the same time, dentists began phoning all over town.

Here the sudden discovery of new painlessness was not quite so clear-cut. The vibration of a drill against teeth often produces a picture of pain where there is no basis for the picture. Children continued to bawl in dentists' offices, imagining pain; but adults felt no hurt.

"What's happened?" demanded astounded oral surgeons. "Our clients feel no pain when we drill into live nerve tissue, or loosen impacted teeth."

"What's happened?" demanded perplexed doctors. "Our patients feel no hurt when we sew up cuts and lance boils."

What's happened?

THE newspapers had it a few hours later. In the early morning editions nearly a half column on an inside page was devoted to phenomena reported by various doctors.

"Medicoes lose patients," the column began. It went on:

A curious callousness to pain has been noted by some doctors among their patients in the last few hours. We thought we were being kidded when the first tall stories began to be told. But a little investigation reveals a basis of truth in them. It seems that either the citizens of our fair metropolis are turning into a race of stoics, or a new nervous disease has appeared which affects sensory impulses.

From all sides come reports of a curious insensibility to pain which has the local sawbones worried. "Things just don't seem to hurt people," said one physician. And he added, not entirely in jest, "How is a doctor going to work if nobody has an ache or a pain?" Along with this queer immunity to pain seems to have come an increase of health and vitality in our noble city. On hearing the odd reports of various doctors, our inquiring reporter went to the nearest hospital to check up. And there he was told an even queerer tale.

The people in the hospitals all want to go home. They are well, they insist. Operations are made without the use of any anesthetic. Those fresh abdominal incisions don't hurt any more. That fractured arm, set only yesterday, does not throb. The new mother, feeling no pain, is convinced she is well enough to walk home and cook dinner for the old man. The pneumonia patient feels weak, but fine. The doctors are having a busy time convincing the invalids that they are ill. Our dentists are beginning to report queer incidents, too

The story went on, jokingly, but with traces of real amazement showing through the reporter's skeptical account. The papers, read over countless breakfast tables, started something.

"What has happened?" everyone wondered.

The morning papers discarded definitely all notions still lingering that the thing might be a hoax. They gave the whole front page to the mystery—save for one small column which regretfully and innocently announced the sudden death, alone in his home, of the distinguished scientist Sigmund Kohl. They ran headlines larger than any used since the war.

"MEDICAL MYSTERY!" the headlines shrieked. With the subheads: "Doctors at loss to explain phenomenon of painlessness. Scientists bewildered."

The articles blared forth:

Something unique in the history of science has been taking place in this city for the past thirty-six hours. Apparently without exception, every man, woman and child in Carversville and immediate environs has become inured to pain. Neither doctors nor scientists can explain it, but the fact remains—nothing hurts anybody any more.

What has given this boon to Carversville? No one knows. It is a phenomenon confined entirely to this city, news wires inform us. People in other parts of the country are as they have always been. But here, pain seems to have taken wing in the night. In less than a day and a half the most amazing state of health ever dreamed of in a Utopian community has been mysteriously granted us. Is it possible that the blessing will be permanent? And will it spread gradually from our city to the rest of the world? Think of a world without pain! The benefits are too vast to be stated immediately. Time alone can bring to full realization what such a blessing would mean——

NINE-tenths of the first page was taken up with jubilant announcement. In the back pages there were published dozens of humorous accounts of freak accidents occurring because of this queer release from pain.

A prominent banker had risen suddenly from his chair at the Union Club, where he had been sitting for some time with his legs crossed. His right leg had gone to sleep, but he was not informed of that by the usual "pins-and-needles" sensation of a limb paralyzed by lack of circulation. The first he knew of it was when the leg buckled under him like rubber and he fell to the floor. He had broken his ankle, but had not felt that, either.

A well-known young clubman had got into an argument with a taxi-driver, and had received a black eye. Not feeling it, he had gone home—and immediately had been besieged by

embarrassing questions from his jealous wife.

By now everyone in the city was aware of the phenomenon, even those whose good health and lack of exposure to accident made them free from aches anyway. And the city went wild.

Liberation from pain! Freedom from the ills of the body! A spontaneous Mardi Gras was staged in every street like no celebration in the memory of the oldest citizen. People did the most astounding things to each other to prove over and over again that it didn't hurt.

And in midnight offices and laboratories scientists sweated with blanched faces to discover what had taken place —and to try to circumvent it. Yes, circumvent it! For while the layman might rejoice, the man of science could think through to deadly truth—as Prince might have thought it through that night in Kohl's study had he not been so dazed by astonishment.

CHAPTER III

The Painless City

THE layman began to get an inkling of what it all really meant the next day, through the papers.

Again most of the first page was given over to discussion of the weird state of affairs. But the accidents described were not so humorous this time. A sinister note was creeping in.

A woman in a northside apartment had run a tub of water for her bath. The heater in the basement had chanced to be more efficient than usual. Not remaining in the bathroom while the tub filled, the woman had not noticed how the water steamed from the faucet. She had stepped into the tub, lain down, and had been slowly scalded to death without feeling it.

A child playing in a newly dug basement had cut its wrist on a broken bottle. The little boy, alone and feeling no pain, had taken his time about climbing up and starting home for attention. He had collapsed in a vacant lot and bled to death.

A man hunting in the medicine chest for cough syrup got out a bottle of carbolic acid by mistake, unlabeled. He tasted the stuff, found nothing unpleasant in it, and swallowed half the bottle. He walked out of his house and fell in the street, dying but still feeling no pain.

These and similar accidents pointed the warning written by the city medical examiner and printed on every first page. A radio broadcast by the medical examiner returned to a situation at first mentioned only jocularly: the fact that doctors were having trouble persuading sick people that they were sick.

"Our hospitals are being emptied—and being unused save by persons in need of the most advanced and obvious surgical treatment," it began. "Our doctors are receiving one-tenth the number of calls they used to. Our clinics are being closed for lack of ills to diagnose.

"We do not know what has caused the new insensibility to pain. But we do know this—that cessation of pain has not brought with it a cessation of the ills that *cause* pain. We still have accidents that may maim for life if not properly treated. We still have swift death in diseases not promptly reported and diagnosed. No matter how well you feel, if there seems to be anything the least wrong—*report to your doctor at once.*"

And the great bulk of the public grinned and continued to rejoice in its surcease from pain. The pill-peddlers were just trying to make business for themselves, was the average man's reaction. He'd bet they were worried!

Well, they were.

AT a hastily gathered medical convention this same medical examiner got up. And he did not call what had befallen the city a blessing.

"Gentlemen," he said, "you all know what has happened, from a doctor's point of view. Pain has left this city. The hurt, not feeling their injuries, are slow to come to us for expert help. The ill, not feeling nausea, pain, or physical distress of any kind, avoid our offices. Either they do not know they

are ill, or, knowing it, decide it can't be serious because they feel all right.

"When people do come to us, we are at a complete loss. We cannot diagnose. The patients have no pains to tell us about. The only discoverable symptoms are those discerned by the eye, such as blotches, rashes or discolorations. Such, as a rule, come only with advanced stages of disease, and leave us helpless.

"Gentlemen, what are we going to do?"

"Find out what has brought about this condition, and stop it," someone called from the rear of the hall.

"You think we haven't tried?" said the examiner bitterly. "We've done everything we could think of. We've analyzed the air we all breathe, and found it normal. We've checked the water we all drink, and found it normal. We've examined every article of food commonly used by all, such as bread, milk, salt. There is absolutely nothing different about any of them.

"Wellsbach, the astronomer, advanced a theory that in its passage through space our planet entered a belt saturated with hitherto unknown rays from some disintegrating star that caused this condition. The theory fails when it is remembered that only in this city is pain unfelt."

No one said anything. No one knew the answer. Meanwhile, stark horror began to catch up to the city.

It began with the children. There the casualties brought by the "blessing" of relief from pain were greatest. Babies crawled against hot stoves and died without a whimper to attract their mothers' attention. Kids wrestled or boxed and injured each other horribly without either victim or victor knowing it. The city promised to be a city of cripples in a generation.

But the older folks got their share too.

In the first place the unwell, not warned by physical distress, began dropping dead at every street corner. Here a man whose advanced heart trouble had seemed cured because he no longer felt cardiac pains.

There a man who had bumped his head an hour ago, not very hard, and had no way of knowing he had fractured his skull. Here an old woman who had got up from what was formerly a bed of pain, and had died from intestinal collapse brought on by cancer in its last stages.

In the second place, occupational accidents grew appallingly in numbers. In foundries men stepped on black-hot metal and saw, too late, that their feet were burning off. In battery stations, men splashed their hands with sulphuric acid and hours later saw their withered fingers amputated, without anesthetics, in emergency operating rooms. In factories, men caught their fingers in flying wheels, and, not feeling the smashed flesh, were not aware of what was happening until their hands and arms had been drawn in too.

THERE were other phases of the bizarre painlessness.

The criminal element, largely held in normal check by fear of pain, began to run wild. Gunshot wounds and clubs no longer hurt; they grew bold with a rat's courage in holding up armed banks and department stores. A crime wave of terrifying proportions rolled up.

There was a huge increase in motor accidents. There are always among us men who are held in check only by the knowledge that if they don't take some sort of care of themselves they'll feel badly later on. Now, released from the threat of morning hangovers, these men drank to stupefaction—and then tried to drive automobiles.

The city became a hell.

Business and industry were paralyzed. Now people were scared frantic and began thronging the anterooms of doctors when it was unnecessary. The slightest rash might mean death from disease. The least cough might be fatal flu. Offices were deserted because white collar workers were afraid of stealthy disease. Factories were emptied because laborers feared unannounced accidents.

At first, when the news was broadcast that those living in Carversville were in some strange way insensible to pain, there had been a rush of visitors, declaring excitedly that they were go-

ing to make their homes here. Now there began a sudden exodus. Nobody wanted to live in the painless city.

By hundreds and then by thousands people trooped from the city to other places to find, gradually, that they began to feel the thrill of pain again.

The scientists of the metropolis redoubled their feverish efforts to discover the cause of the phenomenon. They did not lack for capital. The rich men of the city, watching the rush from Carversville that threatened to ruin them, asked science for the answer.

And no answer was forthcoming. What in God's name had happened?

In the grave lay one man who could have told them—who had caused the miracle to occur. In the far north was another, still storm-trapped. . .

Finally there occurred that which the medical profession had feared from the first: epidemics!

Typhoid, so well defeated by the medical profession that it had almost become a rarity in Carversville, broke out virulently. The flu epidemic increased and claimed its thousands. Childrens' diseases ran wild.

Carversville was on the way to becoming a ghost city. And it was into this riot that Prince stepped from a plane when finally he could get back from the far north.

CHAPTER IV

The Reservoir

PRINCE was not unprepared for it. Radio flashes on the plane had informed him sketchily of what had happened. He had inveighed indignantly against Kohl—and had been told that Kohl was dead, slaughtered by an abscess that could have been treated months before his death and cleared up if he had been able to feel pain and known he had an abscess!

Prince went straight to the medical examiner, and after a few minutes with him, the examiner called the mayor. The three men sat in important conference.

"You say this one man, Sigmund Kohl, was responsible for what has happened?" the mayor demanded. "It doesn't seem possible."

"Nevertheless, it is."

"How did he do it?"

"That, I don't know," Prince said. "I've been trying to figure it out, and can't. I'd suggest we go to his home, with a couple of your best detectives, and try to find out."

They went—and were joined by the Assistant Secretary of War, from Washington.

"We want the secret of this painlessness," the secretary said. "It has occurred to us that it would be invaluable in wartime. You can see how easy it would be to recruit men for a war if they knew nothing could hurt them. We'd have an army that would be invincible."

Prince said nothing. But he could suddenly realize Kohl's great reason for not wanting to give the secret of his discovery too freely. Recruit men for war easily if they were sure they'd feel no wound? They certainly could be recruited easily! The planet might become a war-torn globe with men like monsters forming the armies.

"We don't know how it's done," Prince said. And he privately vowed to try to hide the secret should it be discovered.

Kohl's niece and her husband were living in the old house. Nothing was to be found there, for the couple had rearranged everything. But the laboratory was undisturbed.

"There are several things about this I can't understand," Prince said. "One is, how could Kohl have made a drug discovery? He's not much of a chemist. Electrical phenomena were his specialty. Another is, how was the pain-killing agent distributed so quickly and completely?"

One of the detectives picked up a bottle from a bench near the zinc-lined sink in the laboratory.

"You say the stuff you drank was pinkish?"

Prince nodded.

"And it had no more taste than water?"

Prince nodded again.

"Well," said the detective, a prosaic

man who sought the most simple and logical answers first, "is there a chance that Kohl put a little of this in a bottle of plain water and gave it to you?"

WHAT he was holding up to Prince's view, was a bottle of ordinary grenadine, used in drink-mixing to color and sweeten alcoholic drinks.

"But something made me insensible to pain," Prince objected. "Plain water tinted with grenadine wouldn't do that."

"Here's a funny one," the detective went on, after a moment. "This lab's equipped with the last word in electrical power, and heaters, and everything else. Yet Kohl had a little water-heating unit to fasten on his faucet, like they use in summer cabins or other places where they haven't got regular heaters. And for some reason—the thing's all smashed to hell."

They crowded around. The thing the detective had seen was a little unit, no larger than a man's two fists, which had obviously been designed for water from a faucet to trickle through it. And it had been smashed to bits. The housing, a multiplicity of delicate wiring and magnets and points, were crushed into an unreadable riddle.

"Funny heater," said the medical examiner. "There aren't any resistance coils in that mess. Yet undeniably water *did* run through it."

"Home-made contraption," the detective pointed out. "It looks like a special job. The thing's not a regular patent heater."

"I think we have the answer," Prince said slowly. They crowded around him. "You say you analyzed the water of the city and found it normal?"

"Yes."

"Well, what must have happened, is this: Kohl, partly by accident, discovered that ordinary water, treated by a certain electrolytic process, affected the human nervous system. The water somehow remained so 'charged' that when taken into the body it could interrupt the messages flashed from nerve to brain by faint electrical impulse. In a sense the charge in the water shorted the stronger sensory impulses, which are those of pain. The water would not yield its secret to analysis because *chemically* it was unchanged. The night I was here, Kohl wanted to hide his secret from me so he gave me the treated water tinted with ordinary grenadine, to imply that it was a strange drug. Yet as I said, Kohl was no chemist, he was an electro-physicist."

"Then the city reservoir would be our next stop?"

"Yes. The reservoir. We'll get a diver—"

It was a tense group that descended from the mayor's official car at the great reservoir supplying Carversville with water. The mayor's face reflected dismay.

"It's three miles long and a mile and a half wide. It will take a month to explore that."

Prince shook his head.

"We have two clues. One is that Kohl needed electric power for any mysterious transformer he may have sunk in the reservoir. The other is that the water was probably treated near the reservoir outlet so the city would get it just after it had been freshly treated electrolytically. Both suppositions lead us to a point just above the powerhouse."

The diver descended. The Assistant Secretary of War looked at each face in turn.

"Gentlemen, the United States Government claims this electrolytic process when and if it is discovered."

THE diver was down for thirty minutes. Then he came up, his face a little white. "I found it," he said.

"What? What is the thing? Why didn't you bring it up?"

"It's a black, metal box near the outlet," said the diver. "There's a big power cable trailing from it. Guess I could find where it comes out of the reservoir. I didn't bring the box up because there was a word painted on it."

"A word" frowned the mayor.

"Yeah," said the diver. "Just one word. 'Death.'"

Prince's lips tightened.

"Kohl said he wouldn't let the secret

(Continued on page 127)

Science Questions and Answers

THIS department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited, we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical, also, to promise an immediate answer in every case. However, questions of general interest will receive careful attention.

LIGHTNING

Editor, Science Questions and Answers:

What are the known types of lightning and how are they characterized?

E. C.,
New York, N. Y.

Probably the most familiar type of lightning is streak lightning. Not classified as distinct types, but variations of streak lightning are the following: Ribbon, rocket and bead lightning. Forked and zigzag lightning are also included. Other types more rarely observed are ball or globular lightning and sheet lightning.

Streak lightning exhibits a white or pink path of rather small diameter, from an inch to a foot, and up to a mile in length, depending upon the conditions of discharge. In many cases the path is sinuous and forked, in others it appears as a single streak. This discharge may take place within a cloud, between separate clouds, between clouds and the earth, or between a cloud and surrounding air.

Occasionally a flash or streak of lightning assumes the form of a number of parallel streaks called "ribbon lightning." Most streak discharges consist of several successive discharges, with an appreciable time difference between them. In the intervals between discharges the path may be shifted by the wind. Thus, several successive streaks displaced by the wind may appear as parallel streaks due to the persistence of vision.

Rocket lightning is a term applied to streak lightning discharges, the growth of which is so slow as to appear like a rocket.

Bead lightning is that form in which the path of the discharge appears as a string of luminous globes or beads, separated by darker intervals. Several explanations are given for this form of lightning. One is that it is due to variations of the path of discharge with respect to the line of sight. Another holds that the striae of haze obscures portions of the path. A third is that it is a combination of streak and globe lightning.

Forked lightning refers to the branching of the streak discharge at its lower end in some cases. Two or more objects are often struck at the same time by the forks.

The term zigzag lightning is applied to streak discharges which assume an extremely sinuous path. Such discharges present entirely different appearances from different points of observation.

Globular lightning is a discharge which consists of luminous globes, or ball-shaped masses which are seen to move along the ground, or through the air. These globes sometimes explode with a loud report and cause serious damage. It is a brilliant brush discharge moving along a path of low dielectric strength in an electric field of a storm. This discharge probably proceeds or follows streak lightning immediately. This would account for apparent explosions.

Sheet lightning is a term applied to silent discharges occasionally observed in clouds and haze. This constitutes a distinct type of lightning. Such discharges are somewhat similar to a brush discharge and are usually of white color. The discharge appears to occur as a sheet, although it is more likely a volume effect. It is distinguished from the aurora by the fact that it takes place in the cloud layers, while the aurora is only observed in the rarified upper atmosphere.

The name sheet lightning is falsely given to illumination arising from streak lightning, the source of which is invisible due to cloud banks or because the discharge takes place below the horizon and is so distant that the thunder comes too late to be associated with the illumination or cannot be heard at all. Sheet lightning is distinguished by its persistence and comparatively slow variation of intensity.—Ed.

ATOMIC NUCLEI

Editor, Science Questions and Answers:

Can you give me a brief outline of how the size of atomic nuclei is estimated?

F. A.,
Chicago, Illinois.

Of all the domains which the man of mind has to contemplate, the nucleus of the atom is the smallest. It is at least a thousandfold smaller than the sizes we usually ascribe to the atom itself and, indeed, if all the nuclei in the world were placed in contact with one another, their smallness is such that the earth could go inside an ordinary sized room.

The study of the size, or more definitely the radius, of the nucleus of atoms has, however, been rather disappointing up to the

present time. Various methods of estimating nuclear radii have been devised, none of which are extremely precise, but which show that a general law governs the size of a nucleus which can be briefly stated.

The law is "the volume of a nucleus is proportional to the number of particles in it." In less colloquial terms the radius of a nucleus is proportional to the cube root of its atomic weight.

So simple a rule as this could have been guessed easily by anyone and therein lies the disappointing nature of the study of the nuclear radius, for the conclusions we reach substantiate a law which needs only the most general ideas for a foundation. If, however, definite exceptions to this simple rule could be found, we should have a chance to use these exceptions to tell us more intimate facts about the nature of the nucleus.

Recently such an exception has been found. In work at Yale University by Pollard, Schultz and Brubaker the transmutation of argon into calcium has been observed and studied with striking results. A helium nucleus, or alpha particle, was fired into an argon nucleus and caught by it to form an unstable conglomerate which breaks up into calcium and a neutron, which last can be detected by the apparatus. The interest lies in how the reaction proceeds as the energy of the incoming alpha particle is changed.

A nucleus acts in many ways like a volcano and crater as far as its behavior to incident nuclei is concerned—that is, it repels them until a certain distance is reached and then attracts. In terms of the volcano the crater cannot be reached until enough energy has been spent to reach the top and then it is all too easy to fall inside.

By studying the energy at which the transmutation takes place readily the height of the volcano (or potential barrier) and the radius of the crater (or nuclear radius) can be found. For argon it is found that the nuclear radius is nearly thirty per cent larger than expected, so that argon does not fit into the accepted scheme, and thus revives hope that the study of nuclear radii may help us to gain information about the inside structure of the nucleus. —Ed.

TELESCOPES AND STARS

Editor, Science Questions and Answers:

My friend has a one inch telescope and we recently had an argument over the number of stars that could be seen with it. Can you help us out?

F. N. T.,
Toledo, Ohio.

To answer your question we must make use of two tables well known to the student of astronomy. The first gives the limiting magnitude, m, to which stars can be seen with a telescope, whose aperture is a inches. In formula form this reads:

$$m = 9 + 5 \log a.$$

According to this formula the faintest stars that can be seen with telescopes of different sizes are as follows:

Magnitude—								
9	12	14	15	16	17	18	19	20.5
Aperature, in inches—								
1	4	10	16	25	40	63	100	200

This theoretical limit is not quite attained by the larger telescopes, owing to the absorption of light by the optical parts.

Scares and Van Rhyn worked out a table giving the total numbers of stars brighter than a given visual magnitude:

Magnitude limit—						
0.0	2.0	4.0	6.0	9.0	12.0	15.0
Number of stars—						
2	40	530	4,850	117,000	2,270,000	32,000,000

By comparison with these tables it can be seen that your one inch telescope can see stars up to the 9th magnitude, and that the number of stars up to the ninth magnitude total more than 100,000 stars. The new 200 inch telescope will pass the billion mark. (The photographic limit of the 100 inch Mount Wilson telescope is about the 21st magnitude.)—Ed.

SCIENCE VS. COUNTERFEITS

Editor, Science Questions and Answers:

I have heard of a new invention on the market which makes it possible by electrical means, to discover counterfeit coins. Have you any information as to the principle this device is based upon? I have an invention of my own similar to the one described, and I am anxious to know if my idea is similar to the one announced.

L. E.,
Middletown, N. Y.

The invention you speak of not only detects counterfeits, but automatically separates them from genuine coins. As the coin drops down a chute it is momentarily held and an electric spark is caused to jump between the coin and an electrode. Light from the spark passes into a spectroscope, a device which breaks the light up into a spectrum.

The spectrum of light is then focused on a slit. If the coin is genuine, the focussed beam of light will pass through the slit and strike a photoelectric cell. The cell converts the light into electric energy, which operates a relay. In turn, the relay swings a hopper over the genuine coin-receiving box, into which the coin falls.

On the other hand, if the coin is counterfeit, the electric spark gives a spectrum which, when focussed, will not wholly enter into the slit, but hits a blocking screen. In this case the relay is actuated to swing the hopper over the box which receives the counterfeit coins. —Ed.

MORE SCIENCE QUESTIONS AND ANSWERS NEXT ISSUE

The SCIENCE FICTION LEAGUE

A department conducted for members of the international SCIENCE FICTION LEAGUE in the interest of science fiction and its promotion. We urge members to contribute any items of interest that they believe will be of value to the organization.

EXECUTIVE DIRECTORS

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THE files of THRILLING WONDER STORIES go back for almost a decade. Only the other day the editors went through the old volumes—and there were plenty of thrills in store for us.

How many readers can remember Dr. Keller's "Taine" stories of nine years ago? Who can ever forget D. D. Sharp's classic short story, "The Eternal Man?" The star science fiction stories of past years bring many reminiscences to mind. Dr. Miles J. Breuer . . Charles Cloukey . Gawain Edwards . Francis Flagg Bob Olson. . . .

Elsewhere in this issue, in THE READER SPEAKS, a correspondent suggests the possibility of our reprinting science fiction classics from time to time.

The policy of THRILLING WONDER STORIES has always been that of publishing *new* stories by the best writers. Therefore, before we could take the step of presenting again the works of our older favorite writers, we would like to put the question before the thousands of readers that make THRILLING WONDER STORIES possible. For, after all, our main policy has always been to please the reader.

A good reprint every now and then might prove a worthwhile feature in the magazine. Under no circumstances, however, could we publish more than one short classic in an issue. And we would confine ourselves exclusively to stories which have appeared in WONDER, naturally.

We urge every reader interested in the future progress of T. W. S. to write the editor freely and promptly on this matter. If you are not in favor of this suggestion, by all means let us know. On the other hand, if you are in favor

MOST POPULAR STORY OF THE MONTH

Here, in each issue, THRILLING WONDER STORIES announces the most popular story in the preceding issue. Novelette, short story, or short short—no matter what it is, your comments will decide.

April's favorite stories—there was a tie this month—based on an analysis of all letters to the editor, were:

HOLLYWOOD ON THE MOON
A Novelette by
HENRY KUTTNER
and
EASY MONEY
A Short Story by
EDMOND HAMILTON

Which do you consider the best science fiction story in this issue?

of a science fiction Hall of Fame for outstanding stories of the past by the men who have proved themselves the pioneers of science fiction, won't you suggest the names of short stories and authors you'd like to read once more?

JOIN THE LEAGUE

Join the SCIENCE FICTION LEAGUE! It's an organization of the world's most enthusiastic followers of imaginative fiction—and it fosters that intangible bond between all science fiction readers.

Just fill out the membership application blank provided on this page. There are active members and chapters in every part of the globe.

To obtain a FREE certificate of membership, tear off the name-strip of the cover of this magazine, so that the date and the title of the magazine show, and send it to SCIENCE FICTION LEAGUE, enclosing a self-addressed, stamped envelope. An attractive membership card, suitable in size to fit your wallet, together with a list of the membership rules, will be sent to you.

CHAPTER NEWS AND GENERAL ACTIVITIES

Queens Chapter of the Science Fiction League

Third Meeting

THE minutes of the previous meeting were read and approved. A letter from the Secretary to John W. Campbell, Jr., the new editor of Astounding Stories, and Mr. Campbell's answer were read.

By a unanimous vote, Jack Gillespie and Abraham Oshinsky were made members of the Chapter. JEDDARA, the organ of the QSFL, will henceforth be issued quarterly and apart from COSMIC TALES, its first issue having been bound with the latter magazine. The price will be five cents. Material for this publication must be approved, and, if necessary, corrected by the Chapter members. One need not be a member of this organization in order to submit material. So far, the material for the next issue of JEDDARA includes an article called "Odd," by James V. Taurasi. The Treasurer was appointed business manager of the magazine, therefore readers interested in it will please write to Richard Wilson, Jr., at 86-10 117th Street, Richmond Hill, N. Y., for any information concerning it.

The membership cards which Mario Racic, Jr. had printed were distributed.

Mr. Racic had received a letter from an old WONDER STORIES author, Thos. S. Gardner, who expressed a desire to meet him and the members of the Queens Chapter when next he visited New York.

An article by Bruno Lessing, called "A Trip to Mars," from the journalist's column, "Vagabondia" in the N. Y. Journal-American, was read aloud.

New York City science fiction fans interested in joining the Chapter are asked to write to the Secretary-Treasurer at the above address.

NEW MEMBERS

United States

R. Burns, 464 84th Street, Brooklyn, New York; Dale Tarr, 521 E. Wabash, Crawfordsville, Ind.; J. Trovers, 10 W. Perhal St., Bay Shore, L. I., N. Y.; Donald Thielke, 2735 No. 45th St., Milwaukee, Wis.; Harold Green, 511 Utah Ave., S. E., Huron, So. Dak.; Albert Roger, 45 Vesey St., N. Y. C., N. Y. S.; Harold Levy, 376 Keap St., B'klyn, N. Y.; Carl Guelzo Jr., 5619 N. Spaulding Ave., Chicago, Ill.; Dewey Surratt, Box 589, Bowling Green, Ky.; Chas. Wilkins, 28 Collier Rd., Atlanta, Georgia; M. Reinsberg, 430 Surf St., Chicago, Ill.; Martin Brookins, 2128 E. 24th St., Kansas City, Mo.; Nicholas Verrocchio, 317 Filmore St., Riverside, N. J.; Dale Boden, 1224 16th St., Moline, Ill.; Robert Wharton, 109 Morningside Rd., Verona, N. J.

C. E. Jung, 165th & Homan Avenue, Markham, Illinois; William Rippon, Central Avenue, R. F. D. No. 1, Paterson, New Jersey; Richard Davis, 423 W. Andrews Avenue, Wildwood, New Jersey; William Offik, 103½ S. Swan, Albany, New York; Edwin Haselbauer, Smithtown Avenue, Bohemia, New York; Meyer Baker, 1112 E. 13th Street, Brooklyn, New York; Harry Phillips, Mott, North Dakota; George Mura, 1719 Post Street, San Francisco, California.

NEW MEMBERS

Foreign

John Simpson, Drawer A, Buckingham, Quebec; Vic Jonasson, 215 Kensington St., St. James, Manitoba, Can.; C. Fasslohn, 2 Brynymor Rd., Swansea Glam, Eng.

APPLICATION FOR MEMBERSHIP

SCIENCE FICTION LEAGUE

Science Fiction League,
22 W. 48th St., New York, N. Y.

I wish to apply for membership in the SCIENCE FICTION LEAGUE. I pledge myself to abide by all rules and regulations.

Name .....
(Print Legibly)

Address .....

City

State Age....

Occupation ..... Hobby.....

I am enclosing a stamped, self-addressed envelope and the name-strip from the cover of this magazine (tear off name-strip so that the name THRILLING WONDER STORIES and the date can be seen). You will send me my membership certificate and a list of rules promptly.

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IN this department we shall publish your opinions every month. After all, this is YOUR magazine, and it is edited for YOU. If a story in THRILLING WONDER STORIES fails to click with you, it is up to you to let us know about it. We welcome your letters whether they are complimentary or critical—or contain good old-fashioned brickbats! Write regularly! As many of your letters as possible will be printed below. We cannot undertake to enter into private correspondence.

ORCHIDS FOR AN ARTIST

By James S. Avery

The April issue of THRILLING WONDER STORIES was full of surprises, but the most surprising of all was the appearance of a new artist; Schomburg. His work, although but one illustration, has already distinguished him as one of the better artists of science fiction. More of him, and perhaps a little less of Marchioni.

Another surprise, but along the same line, was the appearance of Leo Morey. I've always rated him at the bottom of the artistic scale, but his illustration for "The Dark Age" was in many ways suggestive of Paul or Dold. And the one for "Rays of Blindness" was far above his usual hurried style.

By all means change the size of type in THE READER SPEAKS Department to the smaller print. We were always able to read the old WONDER'S letter easily, and your own STORY BEHIND THE STORY is done in that size. By changing the print, we can have once more the lengthy and spirited letter section that so vividly set apart the old mag from all the other in the field. And about the comments; some of your own repertoire wasn't bad at all. I always like your clever answers to Doc Lowndes' letters. Who's the genius behind it all? (The linotyper—Ed.)

Speaking of letters, I hope they are still pouring in for the companion magazine, but don't be discouraged if you haven't received as many as you expected. Most people just won't write, even though it would mean a lot to them. Thank goodness I'm not one of that kind as you probably have noticed. If every reader, and this is important, would only make sure that each of his science fiction friends sent in a post card, and if each chapter of the League would start a campaign, we would have our magazine on the stands before next Fall. Right? (Absolutely right—Ed.)—55 Middle St., Skowhegan, Maine.

ANTI-SCIENTIFICTIONIST'S END

By Jack C. Dean

Please pin a medal on Mr. Edmond Hamilton. This gentleman saved the bacon for T.W.S. with his story, "Easy Money." Wesso's weak illustrations, ZARNAK, uninteresting stories, etc., had me determined to make the April issue the last one for me, but I guess I'm hooked for another six years or so. "Easy Money" was pure delight to my simple mind, and it wasn't one loud laugh that I got out of it.

Even a violently anti-scientifictionist friend of mine admitted it was a darned good story after I inveigled him into reading it. (That's another vote.) When science fiction movies become more popular than the present-day gang-shoot'em-ups, this clever little piece can be made into a short that will bring 'em out in the aisles.

"Rays of Blindness" was far above average too, with "The Dark Age" finishing in the money. "The Infinite Enemy" doesn't sound like Mr. Williamson. His grandmother must have written it for him. Phooey to those time-traveling bugoos. You can give Mr. Fearn last place for that one.

By all means make the companion magazine in the large size; and get Paul into it. —53 Shrewsbury Avenue, Red Bank, New Jersey.

WANTS LONGER STORIES

By Russell M. Wood

I agree with the editor of T.W.S. that the policy of having only complete stories each issue is a good one. Like most science fiction fans, I read every story of this type that I can lay my hands on, and it is provoking not to be able to finish a story for months on end. However, I agree with those who think that T.W.S. should give us a long novelette or serial-length once in a while. I think that the companion magazine idea is the solution. Years ago, when this magazine did have a quarterly, most of us science fiction bugs bought it as regularly as we did the monthly. At least I did, and so did my friends who were interested in this type of fiction. And we considered the four bits well spent.

During the past year, the story that I liked the best was "Brain Stealers of Mars," by John W. Campbell, Jr. I have enjoyed his stories for years, but his *thushol*, and the inimitable Penton and Blake, really rang

the gong for me. His Pipeline and Pipeliness were good, too. And so were the absent-minded Plutonians in his latest. But I'll take a thushol, every time. How's about a return engagement between P. & B. and the versatile Martians?

The February issue was one of the best all-around issues for quite a spell. The cover was the best in years, simple but arresting. The best story was "Dream-Dust from Mars," by Manly W. Wellman. Extremely well written, even though the scientific basis was old. Second best, "Via Asteriod," by Gordon A. Giles. Doggone it, for years I've been playing around with the idea of writing a story about a sort of celestial hitch-hike from Earth to Venus by way of Eros, and now this guy comes along and does it from Mars by way of Anteros. Am I burnt up? A darned good yarn, well-written and interesting.

Third best, "Life Eternal," by Eando Binder. Good sequel to a good story. These three stories alone were worth the price of admission.

In reverse English: The stories I didn't like were: "Alchemy of Outer Space," which was hackneyed, without much story interest. Passable, because it was well written, was "We, the Invisible," by Frank B. Long, Jr. All old stuff, vintage of 1923. This author has a very good style, worthy of better material. "Zones of Space" was fair.

Thunk! Was that the wastebasket? Nope, for there's more. "IF" is one of the best short features in the magazine. "SCIENCE QUESTIONS AND ANSWERS" is swell. Thanks for liquidating ZARNAK. That was one purge that will go unmourned.

This is my first letter to any magazine. Guess I was rather rabid, at that. Am eagerly awaiting the next issue. More windmills to tilt at. R-r-rh!—Wilmington, Calif.

THE COMPANION MAG

By Walter C. Scheible

Despite the fact that I am a confirmed science fiction fan and have been following the evolution of science fiction for years, I very rarely write to any publication. I prefer to formulate my own opinions and keep them to myself. In this particular case, however, having just finished the February, 1938 issue of T.W.S. and noted what you had to say in the opening paragraphs of the Science Fiction League Department, I feel it my duty as a serious science fiction enthusiast, as an old Science Fiction Leaguer, as former treasurer of the S.F.L. Chapter No. 5, etc., to speak a few words.

I am entirely in favor of a companion magazine to T.W.S. I vote for it 100%.

As for the format of the new magazine, these are my ideas. Firstly, the magazine should be published in large size. I say this for two reasons. The first is that the large size is more dignified and impressive.

(Continued on page 122)

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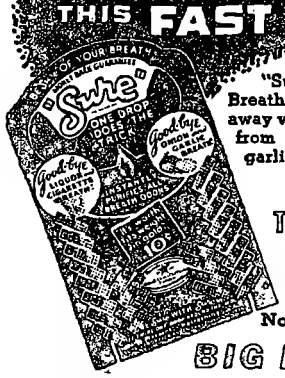

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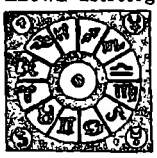

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(Continued from page 121)

The second is that the thicker edition of T.W.S. would be too bulky.

Secondly, as to contents. I would advise that the magazine feature only novel length stories, stories too long for use in T.W.S. By using only novel-length tales in the new mag, and the shorter tales in the issues of T.W.S., you could cover the whole field of science fiction. If the new mag could be published as a quarterly, at a price of not more than fifty cents, and could contain about four good novels, I think it would go over with a bang.

Thirdly, as to authors. You know who the good authors are as well as I do. That's why you're editor. If you could present authors like Campbell, Jr., Dr. Keller, A. Merritt, Taine, Smith (both E. E. and Ashton) Jack Williamson, etc., I don't see how you could fail to succeed. If you get anything real good from new authors, don't hesitate to use it. It's the stories that count —not the names connected with them.

Now just a few words about T.W.S. and I'll let you give the editorial eyes a rest. I am glad to see ZARNAK gone.

I note that you published a letter from David A. Kyle, of Monticello, in February T.W.S. I am also a Monticelloite, here in Alabama as a student at the University of Alabama. Dave Kyle and I are next-door neighbors, so you can understand I was glad to read his letter. Dave and I were both rather skeptical when our mag changed hands, but I'm sure we're both satisfied now.

I like your policy of publishing only complete stories. Stick to it. I also like your STORY BEHIND THE STORY feature, and "IF" and SCIENTIFACTS as well. Your new idea of announcing the favorite story each month is good, too. Perhaps I can help by telling you that I liked "Zones of Space" best in the February issue.

Well, this letter has rather got out of hand. I've written far more than I intended to originally. My subject proved too interesting. I trust that I have not usurped too much of the valuable editorial time. Here's to more Penton and Blake, more Gerry Carlyle, more stories like "Brink of Infinity," "The Circle of Zero," our new mag, and a monthly T.W.S.—819 13th St., Tuscaloosa, Alabama.

(We still need more postcards from readers requesting a companion magazine. Send 'em in fast!—Ed.)

FAVORITES

By Harold F. Keating

In regards to the companion magazine, I am heartily in favor of it. I have wanted it published for years. I prefer the large size edition. As to authors, my favorites are Edmond Hamilton, Clark Ashton Smith, David H. Keller, Henry Kuttner, Eando Binder and plenty of others.

As to the type of story, I veer to the weird-surgery type, test-tubes, man-eating plants, etc.

Stories of Penton and Blake are definitely out; as far as I am concerned. The same does for Tubby. The recent stories, for the most part, that have been appearing in THRILLING WONDER STORIES are constructed very cheaply, with very coarse grammar; and altogether written in a style to appeal to children of 12 years of age.—34 Arnold St., Quincy, Mass.

ALMOST PERFECT

By Mortimer Cohen

I just dropped in to throw you a few brickbats and roses. First I'll hurl the brickbats. Why in the world you ever printed such a story as "Dream Dust From Mars," is beyond my feeble comprehension. It has no science at all, the plot was putrid, and the story, if you asked me really belonged in a romance magazine. Anyhow, women are superfluous in science. "Zones of Space" started off good but the finish lacked finesse.

Jack Binder's stuff is darn good though. So were the rest of your stories starring "We the Invisible," and Anton York's gallivanting through space. In closing I'd like to say, that your magazine has an average of about 85-90 out of a possible 100. I would also appreciate corresponding with all members on scientific subjects. I'll gladly answer all letters.—Apt. 7D, 46 West 83rd St., New York City.

A GREAT MAGAZINE

By Raymond Leger

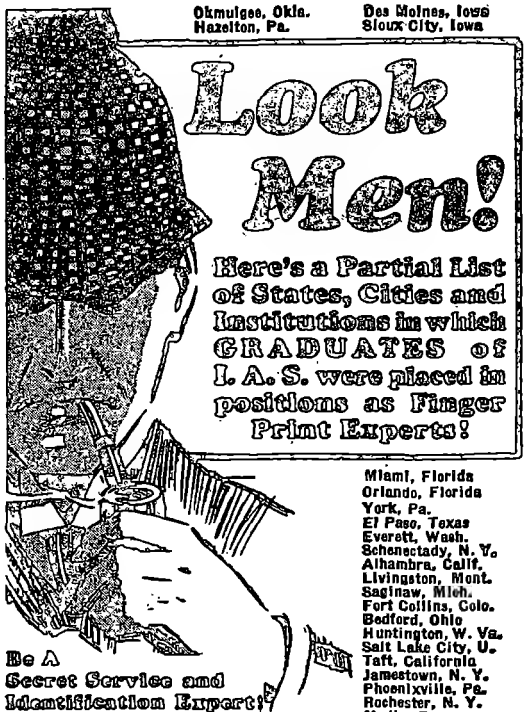
Here is my opinion of T.W.S. I think you have a great magazine full of adventure and ideas. The best writers being Eando Binder, John W. Campbell, Jr., and the authors of all robot stories. In my community your magazine had a hard time at first to find new readers, but a friend of mine who reads these stories and enjoys them tremendously found a way of securing readers. He tells a boy about the best story he has read in the magazine and lends it to him to read. Most fellows with any interest at all in science enjoy your magazine, for it not only increases your knowledge but encourages it.—Newcastle, New Brunswick, Canada.

REPRINTS WANTED

By Allen Randall Charpentier

I am writing this letter mainly in response to the call of a quarterly. I am very much in favor of such a suggestion becoming real. A companion publication for T.W.S. bimonthly would be just as good as a T.W.S. monthly. If a monthly was possible with a quarterly, I would still be 100% for it. I wonder if it would be possible for you to publish reprint issues separately. It may work this way. If the readers would write the story titles that they want reprinted, and subscribe for these reprint issues, a separate issue of these reprints might be published. The stories that the majority

(Continued on page 124)



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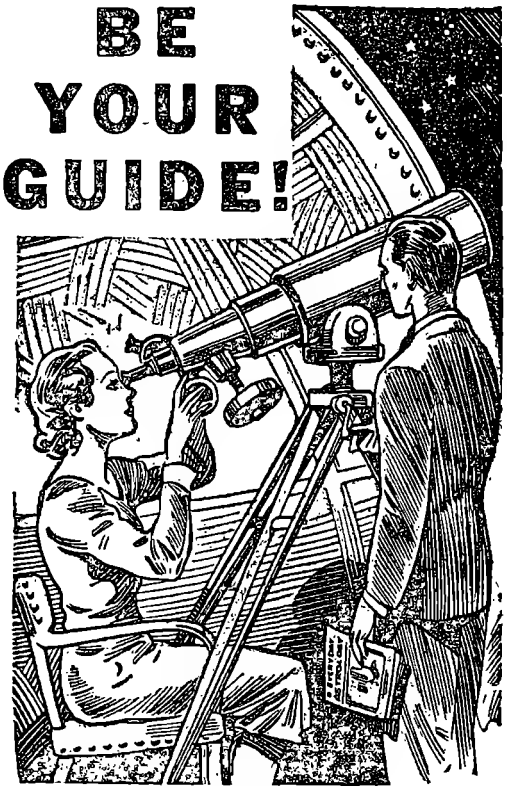

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(Continued from page 123).

would want, would first be published of course. From that, I believe a solution may be worked out for those who wanted reprints.

Now for a suggestion. Ideas for science fiction do not usually come from a clear sky, so I propose a department to express new ideas. Theories, I believe are for the most part, gained by experiments and study. But study is the explanations and conclusions of another person's experiments. So, the ideas of the readers may be used as study for the authors. Right? Not only that, but the other readers might profit by such a department, including those who sent the ideas. A thought leads to progress. As to the stories, well that's just a matter of taste and opinion, so mine is variable to digest them all. Though I will say very emphatically, use only those of sciencefiction. —4541 Rusk Avenue, Houston, Texas.

(What do our readers think of a department devoted to the republishing of classic science fiction stories from issues of several years back? Can we hear from T. W. S. followers on this point?—Ed.)

AN ALL-STAR ISSUE

By Chas. H. Chandler

Having been a reader of your magazine, T.W.S. for a considerable time, I am at last getting around to saying something as well as being a silent reader. Quite a change. The reason? Well, when an issue comes around with five top-notch all-star yarns in it, I find it impossible to keep my peace, and so am rising with cheers. I refer to the February issue, and to the stories, "Dream Dust From Mars," a very well written, well planned story; "Via Asteroid," "Zones of Space," "Alchemy of Outer Space," and "We, the Invisible." Of these five, my vote goes for the first as the best. But the rest are far from ordinary.

As for the rest of the issue, the special article by Sir James Jean was worth the price of the magazine alone and then some. THE STORY BEHIND THE STORY is a unique department. THE SWAP COLUMN is a real favor to we fellows who have something to swap and want a responsive "audience." "The Changer of History" was not bad. Now the inevitable brickbats. "Life Eternal," especially by comparison with the rest of the issue, seemed insipid and as if written by machinery. I don't miss Zarnak, either.

As for the past issues, let me praise you loud and long for such stories as "The Tenth World," "Beyond That Curtain" and "Red Shards on Ceres." A story becomes worth reading, when, like those, it rises above the level of a mere plot and gets a little local color together with some human interest—something that a formula writer never achieves. And authors. Let's have more by John W. Campbell, Jr., Fearn, Hamilton, Wandrei, Ernst and Barnes. And less or none by "hack" and formula writers. Little cause for complaint on that

CANDID CAMERA CATCHES CO-EDS IN

score so far.—920 College Avenue, Wooster, Ohio.

CANDID COMMENTS

By Seymour Kapetansky

Without further ado, the April issue, "Hollywood on the Moon," "Easy Money," and the "Dark Age" stand out. Kuttner uses Weinbaum's "animal" ideas successfully. Hamilton is riotously funny. Smith is thoughtful in his pessimism, substantial in his structure. "The Infinite Enemy" is geometrically nightmarish; "Glimpse" is pollyannishly fantastic; and the other stories are fair. Eddington's article is well done. IF deserves praise. SCIENTIFACTS is illuminating, and the cover, although clogged with too much wordage, is colorfully unique. 1524 Taylor Avenue, Detroit, Michigan.

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Type or hand-print clearly, in submitting announcements. THRILLING WONDER STORIES will not be responsible for losses sustained. Make plain just what you have and what you want to "swap" it for. Enclose a clipping of this announcement with your request. Address: Swap Column, THRILLING WONDER STORIES, 22 West 48th Street, New York, N. Y.

Would like to contact people in foreign countries interested in new issues of the United States stamps in exchange for new issues from their own country. Thos. A. Potts, 2167 Townsend, Detroit, Michigan.

Have printing press and equipment in excellent condition. Want photo enlarger Argus camera, or what have you to offer? Alan Gold, 1170 E. 8th Street, Brooklyn, New York.

Have camera, 35mm films, 75 X microscope, comic books, rolmonica and rolls. Want 16mm films or send list. Norman Goring, Fredericksburg, Virginia.

I have four reels of silent 35mm film and guitar. Swap for 16mm camera, project, film, telescope, or radio parts. Weldon Johnson, Neelyville, Missouri.

Who wants a set of lenses and instructions for constructing a 75 power astronomical telescope. I want a small radio. Robert Rill, 168 Boerum Street, Brooklyn, New York, New York.

Movie film exchanged! 100 to 400 feet complete 16mm subjects. Good condition. Write details. Answered immediately. Louis Leibovitz, 3835 Cambridge, Philadelphia, Pennsylvania.

Will exchange live snakes, salamanders or other reptiles and amphibians from any locality for some of yours. Clarence Shockley, 924 Woodlawn Ave., Terre Haute, Indiana.

I want radio parts for several books that I have in connection with chemistry, biology, plane geometry, English and physics. All letters answered promptly. Casimir Pierog, 7805 Osage Avenue, Cleveland, Ohio.

I have book match covers, poetry and Oregon scene pictures for whatever you have. Willard E. Crawford, Ft. Stevens, Oregon.

To swap for radio amateur parts, condenser, choke, transformer or 5-10 meter receiver; 1200 fine different stamps. Ask list; send yours. Charles A. Piche, 4327 Parthenais Street, Montreal, Canada.

Have good United States stamps to trade for British Colony stamps. Prefer to trade with persons in Canada and other foreign countries. Trade catalogue basis. Erskine Walker, 2519 Post Street, Jacksonville, Florida.

Will trade enlarger complete with lens and developing tank for United States stamps that I do not have—books, singles, used or unused. Make offers. Bill Trumbo, 719 Newport Avenue, Welstes Groves, Missouri.

Have Delta Scroll Saw complete with motor. Would like stamps collection. J. Hiett, 1301 N. Flores Street, Hollywood, California.

350 mixed stamps and 15 foreign covers will swap for midget folding camera. M. Berger, 1205 Pierce Street, San Francisco, California.

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THE STORY BEHIND THE STORY

(Continued from page 6)

finally granted complete independence to all eight worlds, in 2621.

"Since that date, the nine worlds of our System have jealously maintained their independence and the more ambitious of them have constantly sought to encroachupon the others. I have described elsewhere the wars brought on by these policies, the terrific Mars-Saturn struggle of 2777 caused by the Martians' attempt to appropriate Titan, the equally terrible Mars-Venus War of 2866, in which the red planet would have conquered the Venusians but for the intervention of Earth, or the protracted struggle between Neptune, Uranus and Pluto, which ended in the formation of the alliance called the League of the Cold Worlds.

"It is werth noting, however, that although Jupiter is the most powerful single world in our System, that although Mars is the most fiercely ambitious, and that although the League is supreme in the dark, cold outer regions, Earth still maintains a strange dominance in the minds of all of us. We cannot forget that it was Earthmen who pioneered the uncharted worlds and spaceways of the System, that even to this day the navigators and explorers and secret agents of Earth are the most daring of all. There is a proverb in the System, 'as proud as an Earthman.' We of the other worlds must admit that the men of Earth have reason for their pride."

THE PAINLESS HORROR

MEDICAL science is dedicated to the elimination of pain and suffering. It is a commonly accepted thought that when all suffering is removed, mankind will lead a Utopian existence, so to speak.

PAUL ERNST proves otherwise in his biological novelette, TERROR IN UTOPIA. He paints a grim picture of unforeseen catastrophes in his gripping story of the blessing that becomes a curse. And, curiously enough, it was pain itself, literally, that provided the theme of his tale:

TERROR IN UTOPIA grew out of a toothache.

As toothaches have a tendency to do, this one of mine started on Saturday night just after the local dentists had closed their offices and when there was small chance of getting hold of one before Monday morning.

It ached and it ached. No one could do anything to stop it. And I indulged in some pretty unkind thoughts about medicine, and science in general, for being unable to allay an ordinary little pain. It seemed preposterous that science, with all its other achievements, has been unable to kill off that ancient enemy of mankind.

I went on, from resentment to resentment, listing the malignant uselessness of pain. It's a warning, of course. But why, when the twinges of a rheumatic joint have once

NEXT ISSUE: A Special Article by

SIR WILLIAM BRAGG

President of the Royal Society

CANDID CAMERA CATCHES CO-EDS *IN*

pointed out that the joint is out of kilter and needs attention, does the pain persist? You know the joint is in need of care, you are doing all you can to ease it, why then doesn't the pain, having done its duty, go off and plague some one else?

With its function of warning accomplished, it seems plain stupid for the ache to go on and on and on, senselessly, remorselessly. It's as though a fire alarm would continue ringing, long after the firemen were called, the blaze located, and the flames nearly put out. There's no reason in it.

So I sat down and started a story of a Utopia in which scientists had done what they really should have done long ago in actuality: found a way to stop all pain. After the first few pages, of course, the ending of the story suggested itself in no uncertain terms. After all, pain is Nature's danger signal. While we all hate the unwelcome visitor, nevertheless we must suffer it sometimes to cross our thresholds for our own good. In fact, without it we'd be in a very lousy way indeed—as the story brings out.

It was an interesting story to write. I hope it is equally interesting to read. And I hope the reading of it will resign you all to some extent to the endurance of pain as the writing of it resigned me to my toothache.

TERROR IN UTOPIA

(Continued from page 115)

out save in his own good time. When he put the apparatus in the reservoir he realized it might be discovered. So he obviously fixed it so it couldn't be detached from the reservoir wall without danger. Maybe the man detaching it would be electrocuted, maybe he'd be blown to pieces by explosives. At any rate I wouldn't advise taking that black metal box from its place!"

"But we've got to have it," said the war department man, biting his lips. "The transformer in Kohl's laboratory is hopelessly smashed. We must have this larger one, to learn its secret."

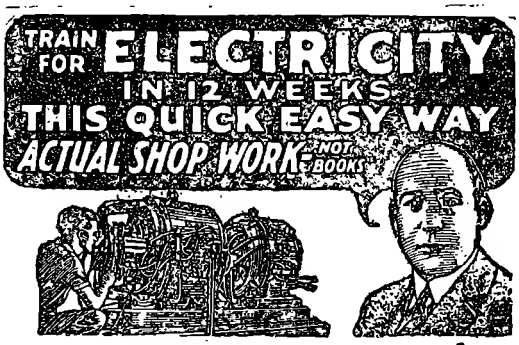
"Do you want to be the man to take it down, in the face of that word, 'death', painted on it?" shrugged Prince.

The secretary said nothing. The diver, who had been searching along the edge of the pool, called the men to him. He had found the cable outlet from the box—a cable laid just under the sod, probably secretly and at night by Kohl. It led in the direction of the pumping station.

"He tapped a pump cable for his power," nodded the detective. "Power loss wouldn't be noticed there. So now what?"

"Now," said Prince quietly, catching up a wooden-handled hatchet the diver

(Concluded on page 128)



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Send me the book that tells the story of your training and your offer to help me get this training.

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Write him today, your proper name and address, the day, month and year of your birth, sex, if married or not, enclosing also a small lock of your hair for palming purposes. YOU WILL THEN RECEIVE A HOROSCOPE ABSOLUTELY FREE. Postage to Holland is 5c. (Kindly enclose 20c. in stamps (no coins) for postage and handling). His address is:

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Kidney, Bladder and Rheumatism Sufferers

Write for FREE trial package of a quick relief treatment which has produced amazing results. Doctors endorse.

PROSTEX COMPANY, Dept. 31-S, MIAMI, OKLA.

(Concluded from page 127)

had brought among his equipment, "we disconnect that box."

"Wait!" almost screamed the war department man, as the surgeon swung the hatchet high. "Wait—If you short-circuit that cable you might set off some kind of explosive in the box—"

The hatchet fell. The rubber-insulated power cable parted under the keen edge.

There was a dull roar in the reservoir. Simultaneously a high column of water spouted from the spot the diver had pointed out as the location of the box.

The men were very still.

Then the Assistant Secretary glared at Prince.

"Damn it, man, you might have known that would happen. Kohl was consistently so secretive about his discovery that it was logical to suppose he'd rig a way of destroying it if this cable were found and disconnected."

"Sorry," said Prince, with his lips trembling a little as if he repressed a smile. "I didn't think—I'm afraid we will never know Kohl's process of killing pain."

He walked toward the mayor's car, with the smile plain on his lips now that his back was turned and the rest could not see.

KOHL had planned to give this to the government at his death. Prince had deliberately circumvented a dead man's wish. But he thought it was for the best. In his mind, the vision of great armies of pain-free monsters mutilating the world and each other, slowly faded.

And from the city of Carversville, the dread freedom from pain slowly faded too.

The curse lifted, and distress came back.

Blessed pains, blessed aches, blessed hurts!

If a man bumped his head, it hurt. If he touched red-hot metal, it burned. If something was wrong with back or stomach, it ached. Gloriously!

The city raised its collective arms and with one voice thanked God that the boon of pain, death's warning, had been returned to it.

CANDID CAMERA CATCHES CO-EDS IN

THE GREAT ILLUSION

(Concluded from page 103)

The distant points of a thousand stars suddenly flashed into burning glory, into a host of magnificent, nearby suns whose brilliance paled the crescent moon.

Across the whole firmament, the stars for the first time in ages blazed out in their true splendor.

He could only stare frozenly. He heard wild, hoarse cries from the men about h i m, distant screams of panic from the cottages farther down the mountain. But he could do nothing but stand rigid, staring wildly up at those hosts of suns revealed to all living men for the first time in the fulness of their true glory.

HE did not know how l o n g he stood there, how long the shouting and running of madly excited men went on around him. He was still staring frozenly at that tremendous sky of flaring suns when a white-faced, babbling colleague came out and clutched his lapels.

"They're near!" The man was almost sobbing. "It's no optical illusion as we first thought—the stars are really near. We've checked a few already—some of them present visible disks, m u s t be very close to our System! It was their apparent distance that must have been the illusion—but how?"

"Near?" the other whispered. "Then some day men can reach them—in rockets like the one Dain and Ormond built. Men, going out, not to the other, lifeless planets, but to the stars!"

And with strange new thought in his eyes, with strange new hope, he stared up into a Universe from which the veil of a cosmic illusion had been forever torn aside.

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Thrilling Wonder Stories
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Flush Kidneys of Acid and Poisons

Stop Getting Up Nights

When kidneys are clogged they become weak—the bladder is irritated—often passage is scanty and smarts and burns—sleep is restless and nightly visits to the bathroom are frequent. The right harmless and inexpensive way to stop this trouble and restore healthy action to kidneys and bladder is to get from any druggist a 35-cent box of Gold Medal Haarlem Oil Capsules and take as directed—you won't be disappointed—but be sure and get GOLD MEDAL Haarlem Oil Capsules—the original and genuine—right from Haarlem in Holland—a grand kidney stimulant and diuretic. Remember also that other symptoms of kidney and bladder trouble are backache, leg cramps, puffy eyes, moist palms and nervousness.

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W. K. STERLINE, 830 Ohio Ave., Sidney, Ohio

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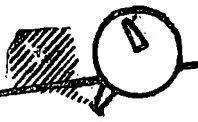

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Name.....*Age*.....*Address*.....

City.....*State*.....*Present Position*.....

If you reside in Canada, send this coupon to the International Correspondence Schools Canadian, Limited, Montreal, Canada

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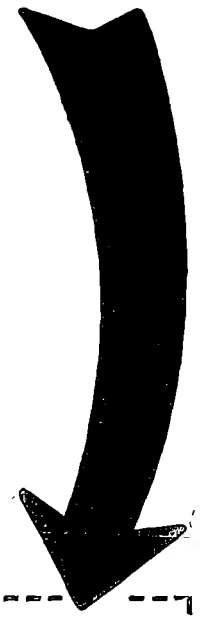
Over 350 men and women *are needed at once* to open up fine-paying Coffee Agencies right in their own home localities. If you are looking for a bona-fide chance to make as high as $60.00 in a week, starting at once, this company will send you everything you need, give you all the help you require, and back you up with its proven successful plans. You risk no money. A chance to be independent, work as you please, and make more than just a modest living. If you want to know whether there is an opening for you in your own or nearby locality, mail the Application below.



SEND NO MONEY

There is no money fee of any kind required with this Application. It merely tells us that you would consider running a Coffee Agency in your locality if we have an opening for you. You will be notified *by return mail* whether your home locality is available. Then you can decide if the money-making possibilities look good to you. No obligation on your part. Those who apply first will be given preference, so be sure to mail your Application without delay—NOW! No letter is required, just the Application. Mail at once to

ALBERT MILLS, President, 5234 Monmouth Ave. Cincinnati, Ohio

COFFEE AGENCY APPLICATION

(1) Write Your Full Name and Address Here

Name .....
(State whether Mr., Mrs., or Miss)

Address .....

City and State.....

(2) How Much Time Can You Devote to Coffee Agency

☐ FULL TIME; ☐ PART TIME
Mark with an "X"

(Full time pays up to $35 to $60 in a week. Part time, either during the day or evenings, pays up to $22.50 in a week.)

(3) State Which Bonus You Prefer—Cash or Ford Automobile

In addition to their cash earnings, we offer our producers a cash bonus of $500.00 or a brand-new, latest model Ford Tudor Sedan. State which you would prefer if you decide to accept our offer. Mark "X" before your choice.

☐ $500.00 CASH BONUS; ☐ LATEST MODEL FORD TUDOR SEDAN

(4) Can You Start at Once?

Mark with an "X" If you cannot start at once, state about when you will be able to start.

☐ YES; ☐ NO

All Applications Will Be Held Strictly Confidential

Mail at Once to
ALBERT MILLS, PRESIDENT
5234 Monmouth Ave. Cincinnati, Ohio

FOOT ITCH

ATHLETE'S FOOT

Send Coupon
Don't Pay Until Relieved

According to the Government Health Bulletin No. E-28, at least 50% of the adult population of the United States are being attacked by the disease known as Athlete's Foot.

Usually the disease starts between the toes. Little watery blisters form, and the skin cracks and peels. After a while, the itching becomes intense, and you feel as though you would like to scratch off all the skin.

BEWARE OF IT SPREADING

Often the disease travels all over the bottom of the feet. The soles of your feet become red and swollen. The skin also cracks and peels, and the itching becomes worse and worse.

Get rid of this disease as quickly as possible, because it is very contagious, and it may go to your hands or even to the under arm or crotch of the legs.

Most people who have Athlete's Foot have tried all kinds of remedies to cure it without success. Ordinary germicides, antiseptics, salve or ointments seldom do any good.

HERE'S HOW TO TREAT IT

The germ that causes the disease is know as Tinea Trichophyton. It buries itself dee in the tissues of the skin and is very ha to kill. A test made shows it takes 20 mi utes of boiling to kill the germ; so yo can see why the ordinary remedies are unsu cessful.

H. F. was developed solely for the pu pose of treating Athlete's Foot. It is liquid that penetrates and dries quickl You just paint the affected parts. It pee off the tissues of the skin where the ger breeds.

ITCHING STOPS IMMEDIATEL

As soon as you apply H. F. you will fin that the itching is immediately relieved. Yo should paint the infected parts with H. F night and morning until your feet are wel Usually this takes from three to ten day although in severe cases it may take longer o in mild cases less time.

H. F. will leave the skin soft and smooth You will marvel at the quick way it bring you relief; especially if you are one of thos who have tried for years to get rid of Athlete' Foot without success.

H. F. SENT ON FREE TRIAL

Sign and mail the coupon, and a bottl of H. F. will be mailed you immediately Don't send any money and don't pay the postman any money; don't pay anything any time unless H. F. is helping you. If it does help you, we know you will be glad to send us $1 for the treatment at the end of ten days. That's how much faith we have in H. F. Read, sign and mail the coupon today.

GORE PRODUCTS, INC. T. F
890 Perdido St., New Orleans, La.

Please send me immediately a complete treatment for foot trouble as described above. I agree to use it according to directions. If at the end of 10 days my feet are getting better, I will send you $1. If I am not entirely satisfied I will return the unused portion of the bottle to you within 15 days from the time I receive it

NAME.....

ADDRESS.....

CITY..... STATE.....